Charipinae Dalla Torre & Kieffer, 1910 (Hymenoptera: Cynipoidea: Figitidae) from the Mercantour National Park (Alpes-Maritimes, France), with descriptions of three new species

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Published on 27 March 2015

urn:lsid:zoobank.org:pub:A452D294-BA01-4C5B-9B0B-77B4079BFF1C

Ferrer-Suay M., Selfa J., Villemant C. & Pujade-Villar J. 2015. — Charipinae Dalla Torre & Kieffer, 1910 (Hymenoptera: Cynipoidea: Figitidae) from the Mercantour National Park (Alpes-Maritimes, France), with descriptions of three new species, *in* Daugeron C., Deharveng L., Isaia M., Villemant C. & Judson M. (eds), Mercantour/Alpi Marittime All Taxa Biodiversity Inventory. *Zoosystema* 37 (1): 115-138. http://dx.doi.org/10.5252/z2015n1a5

ABSTRACT
Charipinae Dalla Torre & Kieffer, 1910 material collected during the ATBI of the Mercantour National Park in the Alpes-Maritimes (France) has been studied. Based on the study of 362 specimens, 35 species in four genera have been identified from: 23 *Alloxysta* Förster, 1869; 10 *Phaenoglyphis* Förster, 1869; one *Apocharips* Fergusson, 1986 and one *Dilyta* Förster, 1869. Of these, 19 species are recorded from France for the first time: *Alloxysta abdera* Fergusson, 1986; *Alloxysta arcuata* (Kieffer, 1902); *Alloxysta brachycera* Hellén, 1963; *Alloxysta brevis* (Thomson, 1962); *Alloxysta fracticornis* (Thomson, 1862); *Alloxysta mullensis* (Cameron, 1883); *Alloxysta pilipennis* (Hartig, 1840); *Alloxysta postica* (Hartig, 1841); *Alloxysta proxima* Belizin, 1962; *Apocharips trapezoidea* (Hartig, 1841); *Phaenoglyphis abbreviata* (Thomson, 1877); *Phaenoglyphis americana* Baker, 1896; *Phaenoglyphis calverti* Andrews, 1978; *Phaenoglyphis evenhuisi* Pujade-Villar & Paretas-Martínez, 2006; *Phaenoglyphis fuscicornis* (Thomson,

KEY WORDS
Alloxysta,
Alps,
Taxonomy,
ATBI,
new species.

1877); *Phaenoglyphis gutierrezi* Andrews, 1978; and *Phaenoglyphis longicornis* (Hartig, 1840). All the Charipinae species identified are briefly described and compared with one another. Three new species are described and illustrated in detail: *Alloxysta alpina* Ferrer-Suay & Pujade-Villar, n. sp.; *Alloxysta franca* Ferrer-Suay & Pujade-Villar, n. sp. and *Alloxysta pilae* Ferrer-Suay, n. sp. A key to the species of Charipinae known from the Mercantour National Park is provided.

MOTS CLÉS
Alloxysta,
Alpes,
Taxonomie,
ATBI,
espèces nouvelles.

RÉSUMÉ
Faune des Charipinae Dalla Torre & Kieffer, 1910 (Hymenoptera: Cynipoidea: Figitidae) du Parc national du Mercantour (Alpes-Maritimes, France), avec la description de trois nouvelles espèces.
L'étude de 362 Charipinae Dalla Torre & Kieffer, 1910 collectés dans le Parc national du Mercantour (Alpes-Maritimes, France) dans le cadre de l'ATBI Mercantour a permis l'identification de 35 espèces dans quatre genres : 23 *Alloxysta* Förster, 1869 ; 10 *Phaenoglyphis* Förster, 1869 ; un *Apocharips* Fergusson, 1986 et un *Dilyta* Förster, 1869. 19 d'entre elles sont nouvelles pour la faune de France : *Alloxysta abdera* Fergusson, 1986 ; *Alloxysta arcuata* (Kieffer, 1902) ; *Alloxysta brachycera* Hellén, 1963 ; *Alloxysta brevis* (Thomson, 1962) ; *Alloxysta fracticornis* (Thomson, 1862) ; *Alloxysta mullensis* (Cameron, 1883) ; *Alloxysta pilipennis* (Hartig, 1840) ; *Alloxysta postica* (Hartig, 1841) ; *Alloxysta proxima* Belizin, 1962 ; *Apocharips trapezoidea* (Hartig, 1841) ; *Phaenoglyphis abbreviata* (Thomson, 1877) ; *Phaenoglyphis americana* Baker, 1896 ; *Phaenoglyphis calverti* Andrews, 1978 ; *Phaenoglyphis evenhuisi* Pujade-Villar & Paretas-Martínez, 2006 ; *Phaenoglyphis fuscicornis* (Thomson, 1877) ; *Phaenoglyphis gutierrezi* Andrews, 1978 and *Phaenoglyphis longicornis* (Hartig, 1840). Toutes les espèces recensées sont décrites brièvement et comparées entre elles. Trois espèces nouvelles : *Alloxysta alpina* Ferrer-Suay, n. sp. ; *Alloxysta franca* Ferrer-Suay & Pujade-Villar, n. sp. et *Alloxysta pilae* Ferrer-Suay, n. sp. font l'objet d'une description détaillée et leurs principaux caractères morphologiques sont illustrés. Une clé d'identification des espèces de Charipinae présentes dans le Parc national du Mercantour est également fournie.

INTRODUCTION

Charipinae Dalla Torre & Kieffer, 1910 (Cynipoidea: Figitidae) are very small wasps characterized by a very shiny and smooth body, but very few diagnostic features (Ferrer-Suay *et al.* 2012a). These peculiarities and the great number of species described over the years have led to the current chaotic taxonomic state of this subfamily. Charipinae are all secondary parasitoids of aphids *via* Aphidiinae Haliday, 1833 (Hymenoptera: Braconidae) and Aphelininae Thomson, 1876 (Hymenoptera: Aphelinidae) or secondary parasitoids of psyllids *via* Encyrtidae Walker, 1837 (Hymenoptera: Chalcidoidea) (Menke & Evenhuis 1991). They are economically very important in being able to counteract the biological control performed by primary parasitoids.

Charipinae have been recorded in all biogeographic regions. They have a wide continental and insular distribution, mainly in temperate areas, ranging from above the Arctic Circle (Lapland and Alaska) to 47° S in Argentina; some representatives have been found at 2750 m a.s.l. (Andrews 1978). In this wide range, however, their distribution is restricted to areas where aphids and primary parasitoids are present.

Eight valid genera are currently recognized in Charipinae: *Alloxysta* Förster, 1869 (cosmopolitan), *Apocharips* Fergusson, 1986 (cosmopolitan, but not recorded from Australia), *Dilapothor* Paretas-Martínez & Pujade-Villar, 2006 (Australia), *Dilyta* Förster, 1869 (cosmopolitan), *Lobopterocharips* Paretas-Martínez & Pujade-Villar, 2007 (Nepal), *Lytoxysta* Kieffer, 1909 (North America), *Phaenoglyphis* Förster, 1869 (cosmopolitan), and *Thoreauana* Girault, 1930 (Australia). *Alloxysta* and *Phaenoglyphis* are the most speciose and widespread genera within the subfamily, respectively containing 111 and 31 currently valid species (Ferrer-Suay *et al.* 2012a).

During the course of the ATBI Mercantour project 362 Charipinae specimens have been collected in Malaise traps. They represent 35 species, of which 19 are recorded for the first time from France and three are new for science. We describe and illustrate here all these species and provide a key to the Charipinae species recorded in the Mediterranean Alps.

MATERIAL AND METHODS

The specimens examined here were collected in the framework of the "Terrestrial Invertebrates fieldwork module" of the ATBI Mercantour project. The Mediterranean Alps (Mercantour/Alpi Marittime) lie at a crossroads of climatic and biogeographical factors (continental, Alpine, Mediterranean and Ligurian), and encompasses a wide diversity of altitudes, exposures, geological formations and pedological substrates (Deharveng *et al.* 2015, this volume).

Insect collection was performed between 2009 and 2011 using a pair of standard (black and white) Malaise traps set up less than 100 m from each other at each sampling site.

TABLE 1. — Sample codes and general information on the location of the sampling sites (all in Alpes-Maritimes, 06), their main vegetation and the sampling period.

Sample codes	Year	Sampling period	District	Sample site	Vegetation	Altitude	Longitude	Latitude	Nb of samples
M09-BOR1400-T1/T8-M1	2009	11.VI-15.X	St-Martin-Vésubie	Le Boréon	Meadows and spruce forest	1540	7.2871439	44.1146875	8 (T1-T8)
M09-BOR14006-T1/T8-M2	2009	11.VI-15.X	St-Martin-Vésubie	Le Boréon	Meadows and spruce forest	1549	7.2890533	44.1143415	8 (T1-T8)
M09-BOR2000-T1/T8-M1	2009	10.VI-15.X	Valdeblore	Col de Salèse	Meadows, rhododendrons, larch and spruce forest	2058	7.23698	44.13734	8 (T1-T8)
M09-BOR2000-T1/T8-M2	2009	10.VI-15.X	Valdeblore	Col de Salèse	Larch forest	2032	7.2352837	44.1388598	8 (T1-T8)
M09-SES1400-T1/T8-M1	2009	9.VI-15.X	St-Dalmas-le-Selvage	Vallon de St-Dalmas: La Buisse	Meadows, broadleaved and larch forest	1437	6.8875257	44.2848357	8 (T1-T8)
M09-SES1400-T1/T8-M2	2009	9.VI-15.X	St-Dalmas-le-Selvage	Vallon de St-Dalmas: La Buisse	Meadows, broadleaved and larch forest	1421	6.8867683	44.2850731	8 (T1-T8)
M09-SES2000-T1/T8-M1	2009	8.VI-15.X	St-Dalmas-le-Selvage	Bois de Sestrière	Larch forest	1966	6.8240421	44.2927562	8 (T1-T8)
M09-SES2000-T1/T8-M2	2009	8.VI-15.X	St-Dalmas-le-Selvage	Bois de Sestrière	Larch forest	2011	6.8228732	44.2925219	8 (T1-T8)
M10-CAI1400-T1/T7-M1	2010	1.VII-15.X	Saorge	Forêt de Caïros: Vallerasse	Fir forest	1379	7.45615	44.00338	7 (T1-T7)
M10-CAI1400-T1/T7-M2	2010	1.VII-15.X	Saorge	Forêt de Caïros: Vallerasse	Fir forest	1387	7,45692	44,00343	7 (T1-T7)
M10-CAI2000-T1/T7-M1	2010	30.VI-15.X	Saorge	Tête de la Poudrière	Larch forest	1953	7.42407	44.01454	7 (T1-T7)
M10-CAI2000-T1/T7-M1	2010	30.VI-15.X	Saorge	Tête de la Poudrière	Larch forest	1992	7,42459	44,01388	7 (T1-T7)

TABLE 2. — Codes and dates of the successive sampling periods for each sampling site.

Site	Year	T1	T2	T3	T4	T5	T6	T7	T8
BOR 1400 M1 & M2	2009	11-24.VI	24.VI-9.VII	9-24.VII	24.VII-13.VIII	13-27.VIII	27.VIII-18.IX	18.IX-5/X	5-15/X
BOR 2000 M1 & M2	2009	10-24.VI	24.VI-9.VII	9-24.VII	24.VII-13.VIII	13-27.VIII	27.VIII-18.IX	18.IX-5/X	5-15/X
SES 1400 M1 & M2	2009	9-30.VI	30.VI-10.VII	10-23.VII	23.VII-7.VIII	7-19.VIII	19.VIII-22.IX	22.IX-7/X	7-15/X
SES 2000 M1 & M2	2009	8-24.VI	24.VI-10.VII	10-23.VII	23.VII-7.VIII	7-19.VIII	19.VIII-22.IX	22.IX-7/X	7-15/X
CAI 1400 M1 & M2	2010	1-16.VII	16-31.VII	31.VII-16.VIII	16.VIII-30.VIII	30.VIII-15.IX	15-30.IX	30.IX-15/X	–
CAI 2000 M1 & M2	2010	30.VI-16.VII	16-31.VII	31.VII-16.VIII	16.VIII-30.VIII	30.VIII-15.IX	15-30.IX	30.IX-15/X	–

Sampling site locations varied from year to year, but in a given valley two sites were always selected: one between 1400-1500 m and the other at about 2000 m a.s.l. These paired sampling sites were located in the Saint-Martin-de-Vésubie and Saint-Delmas-le-Selvage districts (Alpes-Maritimes) in 2009 (4 sampling sites), in the Saorgue district (Alpes-Maritimes) in 2010 (2 sampling sites) (Fig. 1) and finally in the Meyronnes and Larche districts (Alpes-de-Haute-Provence) in 2011 (2 sampling sites) but these samples were not taken into account in this study. Traps were emptied every two weeks from about June to October, along a number of weeks varying from year to year depending on the climatic conditions (mainly snowfall) at the beginning and end of the sampling period (Deharveng *et al.* 2015, this volume).

The Charipinae studied here come only from the 2009 and 2010 samples. All samples collected from a given Malaise trap were labelled using a coding system where "M" refers to Mercantour, "9" or "10" indicates the sampling year, "BOR", "SES" or "CAI" the sampling area, "1400/1500 or 2000" the sampling altitude, T1 to T8 the sequence of the successive sampling periods and "M1 or M2" the different Malaise traps of each pair. Detailed information on the trap locations and geographic coordinates, the sampling periods and the main vegetation present at the sampling sites are given in Table 1. The codes and corresponding dates of the successive sampling periods for each sampling site are given in Table 2.

Specimens were studied using stereomicroscopy (NIKON SMZ-1). The field-emission gun environmental scanning electron microscope (FEI Quanta 200 ESEM) was used for high-resolution imaging without gold-coating of the specimens.

Most of specimens are deposited at MNHN (Muséum national d'Histoire naturelle, Paris, France; curator C. Villemant), the rest of the material being housed at the University of Barcelona (UB) (Pujade-Villar pers. col.).

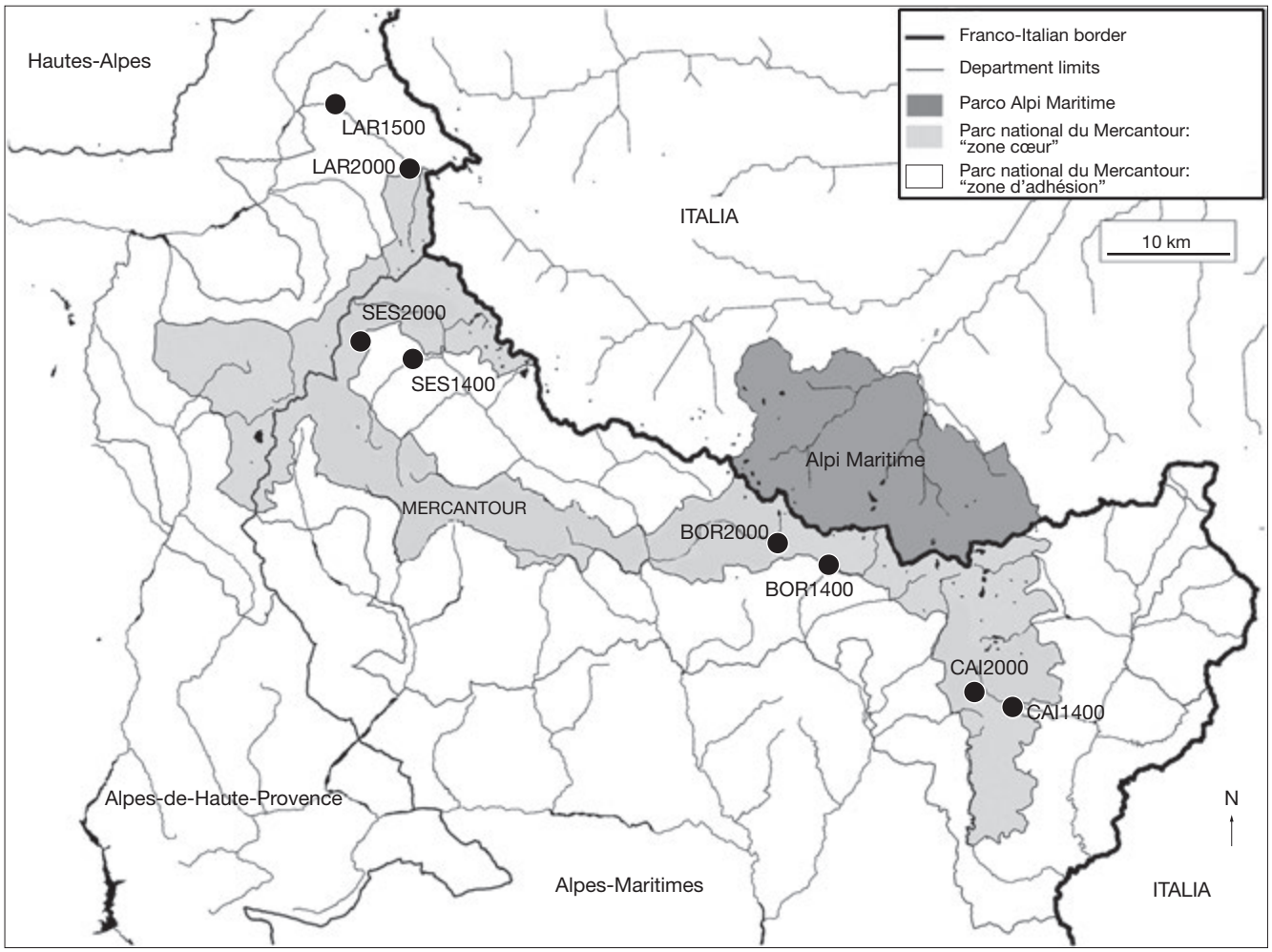

FIG. 1. — Locations of the Malaise traps set up in the Mercantour National Park in 2009 (BOR1400, BOR2000, SES1400 and SES2000) and 2010 (CAI1400 and CAI2000) and 2011 (LAR1400 and LAR2000) (see Table 1 for details) as well as in 2011 in Meyronnes (LAR1400) and Larche districts (LAR2000).

Morphological terms follow Paretas-Martínez *et al.* (2007). Measurements and abbreviations include F1-F12: first and subsequent flagellomeres. Measurements in antennal formulae are given as length (width): from pedicel to F4 (F4-F12 are subequal in these species). Measurements were made with the microscope, using an ocular micrometer. The width of the forewing radial cell is measured from the margin of the wing to the base of Rs vein. The transfacial line is the distance between the inner margins of the compound eyes, measured across the face through the antennal sockets. The malar space is the distance from the mandible basis to the ventral margin of the compound eye. Females and males have the same morphology, unless otherwise indicated.

RESULTS

Species are presented in alphabetical order. Sample code numbers are used to indicate the collection details of the non Type material examined. The reader is referred to Tables 1 and 2 for the corresponding data.

SYSTEMATICS

Subphylum HEXAPODA Blainville, 1816
Class INSECTA Linnaeus, 1758
Order HYMENOPTERA Linnaeus, 1758
Suborder APOCRITA Latreille, 1810
Superfamily CYNIPOIDEA Billberg, 1820
Family FIGITIDAE Thomson, 1862
Subfamily CHARIPINAE Dalla Torre & Kieffer, 1910
Genus *Alloxysta* Förster, 1869

Alloxysta abdera Fergusson, 1986
(Figs 2A; 3A)

Alloxysta abdera Fergusson, 1986: 10.

MATERIAL EXAMINED. — (5♀). M10-CAI2000-T1-M1: 3♀; M10-CAI2000-T5-M2: 2♀. 3♀ deposited at MNHN and 2♀ at UB.

DISTRIBUTION. — Previously known from England (Fergusson 1986). First record from France.

HOSTS. — Unknown.

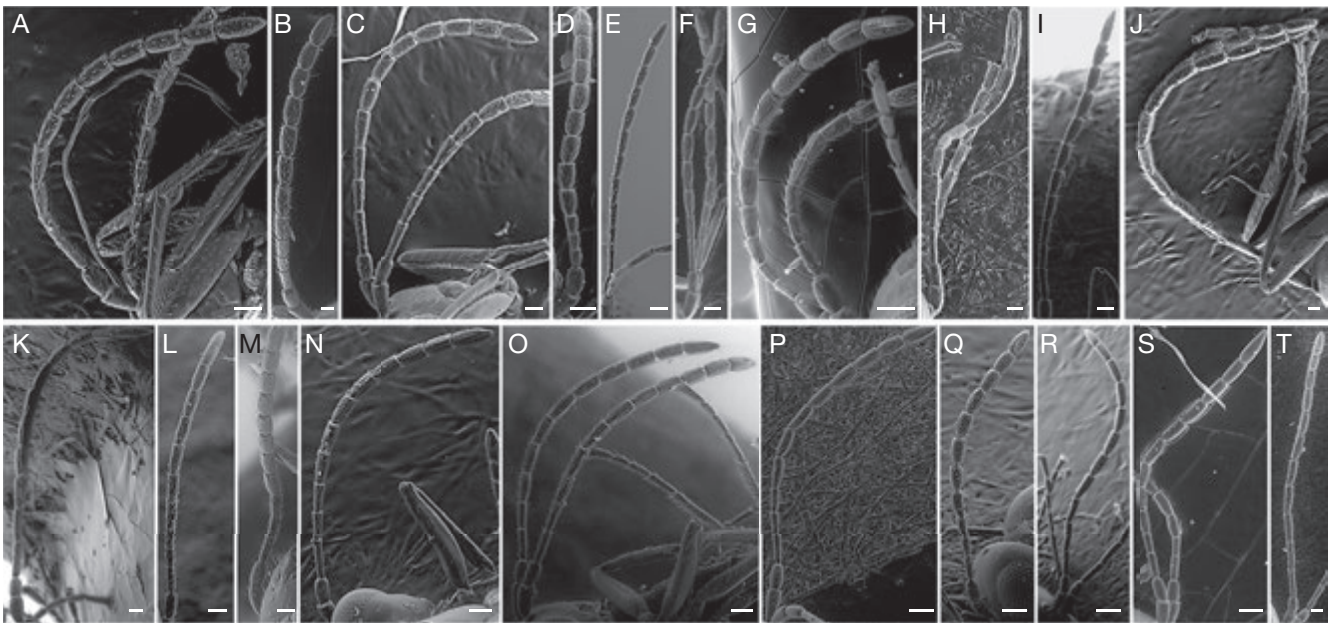

Fig. 2. — Types of *Alloxysta* Förster, 1869 antennae: **A**, *A. abdera* Fergusson, 1986; **B**, *A. arcuata* (Kieffer, 1902); **C**, *A. brachycera* Hellén, 1963; **D**, *A. brevis* (Thomson, 1862); **E**, *A. castanea* (Hartig, 1841); **F**, *A. circumscripta* (Hartig, 1841); **G**, *A. citripes* (Thomson, 1862); **H**, *A. fracticornis* (Thomson, 1862); **I**, *A. consobrina* (Zetterstedt, 1838); **J**, *A. longipennis* (Hartig, 1841); **K**, *A. macrophadna* (Hartig, 1841); **L**, *A. melanogaster* (Hartig, 1840); **M**, *A. mullensis* (Cameron, 1883); **N**, *A. nigrita* (Thomson, 1862); **O**, *A. obscurata* (Hartig, 1840); **P**, *A. pilipennis* (Hartig, 1840); **Q**, *A. postica* (Hartig, 1841); **R**, *A. proxima* Belizin, 1962; **S**, *A. pusilla* (Kieffer, 1902); **T**, *A. victrix* (Westwood, 1833). Scale bars: 50 µm.

Diagnosis. — *Alloxysta abdera* is characterized by its completely open radial cell, being 2.2 × longer than wide in both male and female; pronotal and propodeal carinae present; female antenna with rhinaria beginning from F4, F1 longer than pedicel and subequal to F2, F2 longer than F3, F3 slightly longer than F4 (Fig. 2A); male antenna with rhinaria beginning from F2, F2 curved, F1 longer than pedicel and F2, F2 shorter than F3, F3 subequal to F4. Similar to *Alloxysta pallidicornis* (Curtis, 1838), but the two species can be differentiated by: 1) flagellomeres proportions in female: F2 longer than F3, F3 slightly longer than F4 in *A. abdera*, whereas F2-F4 are subequal in length in *A. pallidicornis*; 2) shape of propodeal carinae: forming a plate with apical setae and sides slightly curved in *A. abdera*, whereas the two well defined carinae are basally joined and apically separated in *A. pallidicornis* and 3) the proportions of the radial cell: 2.2 × longer than wide in *A. abdera* (Fig. 3A), versus 2.6 × in *A. pallidicornis*.

Alloxysta alpina
Ferrer-Suay & Pujade-Villar, n. sp.
(Fig. 4)

Type material. — (3♀). **Holotype.** ♀ (MNHN) labelled M9-SES2000-T5-M2, Saint-Dalmas-le-Selvage, Vallon de Sestrière, larch forest, Alt: 2011, 07-19.VIII.2009: 1♀.
Paratypes. 2 ♀ (MNHN, UB) labelled M9-SES2000-T3-M2, Saint-Dalmas-le-Selvage, Vallon de Sestrière, larch forest, Alt: 2011 10-23.VII.2009: 1♀; M10-CAI1400-T4-M2, Forêt de Caïros, fir forest, Alt: 1387, 16-30.VIII.2010: 1♀.

Etymology. — The new species is named after the mountain range where it was first found.

Distribution. — France.

Hosts. — Unknown.

Diagnosis. — *Alloxysta alpina* Ferrer-Suay & Pujade-Villar, n. sp. is characterized by a completely open radial cell 3.8 × longer than wide, pronotal carinae present, propodeal carinae absent, female antenna with rhinaria beginning from F4, and F2 longer than F1 and F3. It is similar to *Alloxysta mara* Paretas-Martínez & Pujade-Villar, 2005, but the two species can be differentiated by flagellomere proportions: F2 longer than F1 and F3 in *A. alpina* Ferrer-Suay & Pujade-Villar, n. sp., but F1-F3 subequal in length in *A. mara*.

Description

Length
Female (Fig. 4D): 0.9-1.2 mm. Male unknown.

Coloration
Head, mesosoma and metasoma yellowish brown. Antenna yellow, darkening towards apex. Legs yellow and veins yellowish brown.

Head
Transversely ovate, smooth and shiny, slightly wider than high in front view. Setae dense on face below and between toruli, scattered above toruli and on vertex. Transfacial line 1.1 × height of compound eye. Malar space 0.4 × height of compound eye.

Antenna
Female: 13-segmented, filiform. All antennomeres covered with sparse setae. F1-F3 smooth and thinner than remaining flagellomeres; F4-F11 with rhinaria, club shaped. Antennal formula: 2.0 (1.1); 2.8 (0.6); 3.0 (0.6); 2.8 (0.6); 3.1 (0.9) (Fig. 4C).

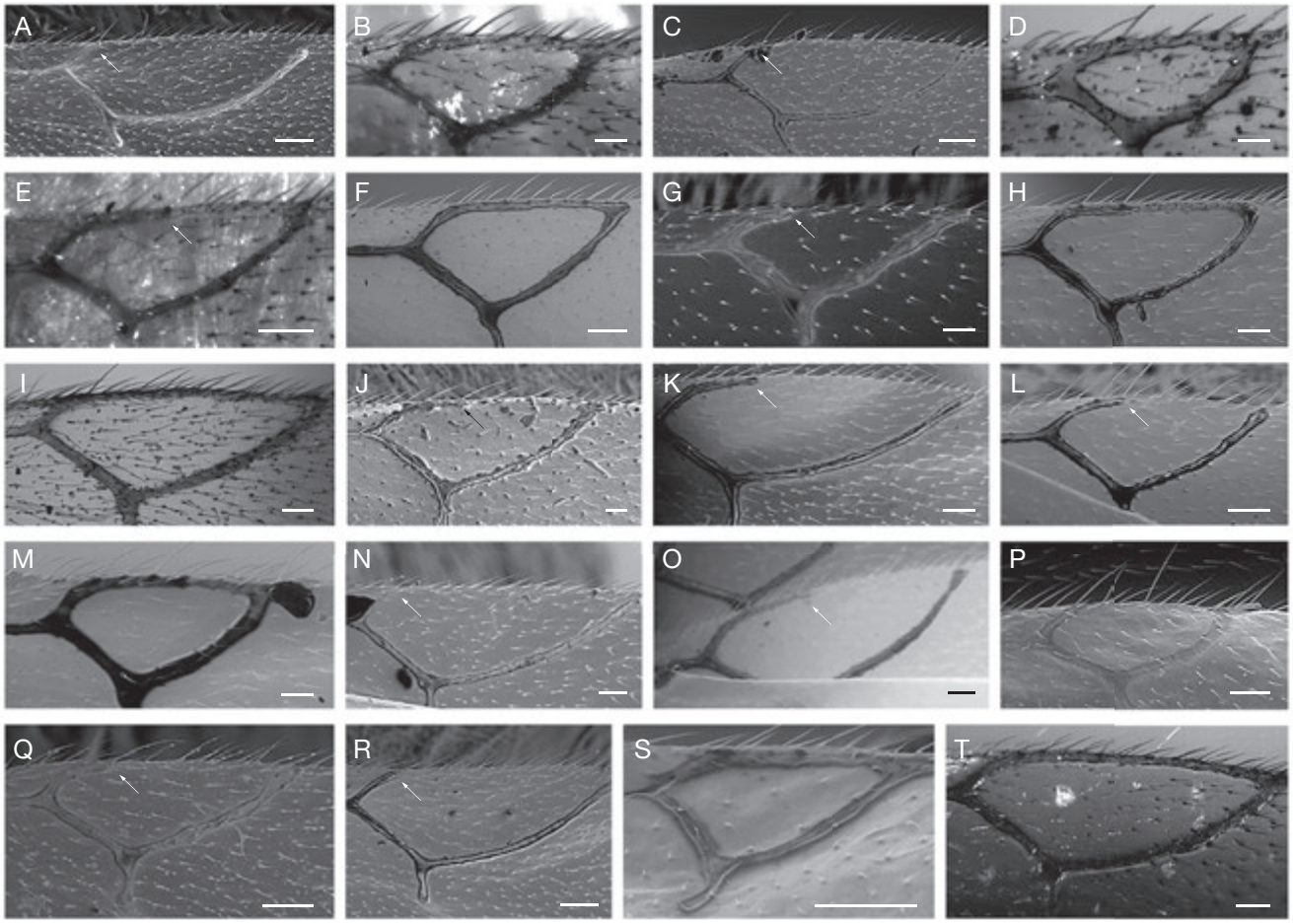

FIG. 3. — Types of *Alloxysta* Förster, 1869 radial cells: **A**, *A. abdera* Fergusson, 1986; **B**, *A. arcuata* (Kieffer, 1902); **C**, *A. brachycera* Hellén, 1963; **D**, *A. brevis* (Thomson, 1862); **E**, *A. castanea* (Hartig, 1841); **F**, *A. circumscripta* (Hartig, 1841); **G**, *A. citripes* (Thomson, 1862); **H**, *A. fracticornis* (Thomson, 1862); **I**, *A. consobrina* (Zetterstedt, 1838); **J**, *A. longipennis* (Hartig, 1841); **K**, *A. macrophadna* (Hartig, 1841); **L**, *A. melanogaster* (Hartig, 1840); **M**, *A. mullensis* (Cameron, 1883); **N**, *A. nigrita* (Thomson, 1862); **O**, *A. obscurata* (Hartig, 1840); **P**, *A. pilipennis* (Hartig, 1840); **Q**, *A. postica* (Hartig, 1841); **R**, *A. proxima* Belizin, 1962; **S**, *A. pusilla* (Kieffer, 1902); **T**, *A. victrix* (Westwood, 1833). Scale bars: 50 µm.

Mesosoma

Pronotum with two lateral carinae, densely setose with distolateral corners less hairy (Fig. 4E). Mesoscutum smooth and shiny, round in dorsal view with few scattered setae and two lines of setae on both sides. Scutellum smooth and shiny with scattered setae more abundant apically. Height of mesopleural triangle along anterior margin 1.5 × the height of mesopleuron. Propodeum densely setose and without carinae (Fig. 4B).

Forewing

Longer than body, 1.7 × longer than mesosoma and metasoma together, densely setose; marginal setae present (Fig. 4A). Radial cell open, 3.8 × longer than wide (Fig. 4A). R1 short and slightly curved; Rs long and slightly curved.

Metasoma

Proximal part with an incomplete ring of setae, glabrous centrally and wider laterally. Rest of metasoma smooth and shiny, with terga clearly visible.

Alloxysta arcuata (Kieffer, 1902)
(Figs 2B; 3B; 5A; 6A)

Allotria (*Allotria*) *arcuata* Kieffer, 1902a: 12.

MATERIAL EXAMINED. — (23♀). M09-BOR1400-T4-M1: 1♀; M09-BOR2000-T4-M1: 2♀; M09-SES1400-T2-M1: 1♀; M09-SES1400-T5-M1: 1♀; M09-SES1400-T1-M2: 5♀; M09-SES1400-T2-M2: 1♀; M09-SES1400-T3-M2: 1♀; M09-SES2000-T5-M2: 1♀; M10-CAI1400-T2-M1: 1♀; M10-CAI1400-T1-M2: 2♀; M10-CAI1400-T2-M2: 1♀; M10-CAI1400-T7-M1: 2♀; M10-CAI2000-T1-M1: 1♀; M10-CAI2000-T4-M1: 2♀; M10-CAI2000-T6-M2: 1♀. Material deposited at UB except for 8♀ deposited at MNHN.

DISTRIBUTION. — Previously known from the Palaearctic (Ferrer-Suay *et al.* 2012b). First record from France.

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Alloxysta arcuata* is characterized by: small closed radial cell, 2.3 × longer than wide (Fig. 3B), pronotal carinae present (Fig. 5A), propodeal carinae forming a plate (Fig. 6A), female antenna with rhinaria beginning from F3; F1 subequal to pedicel and longer

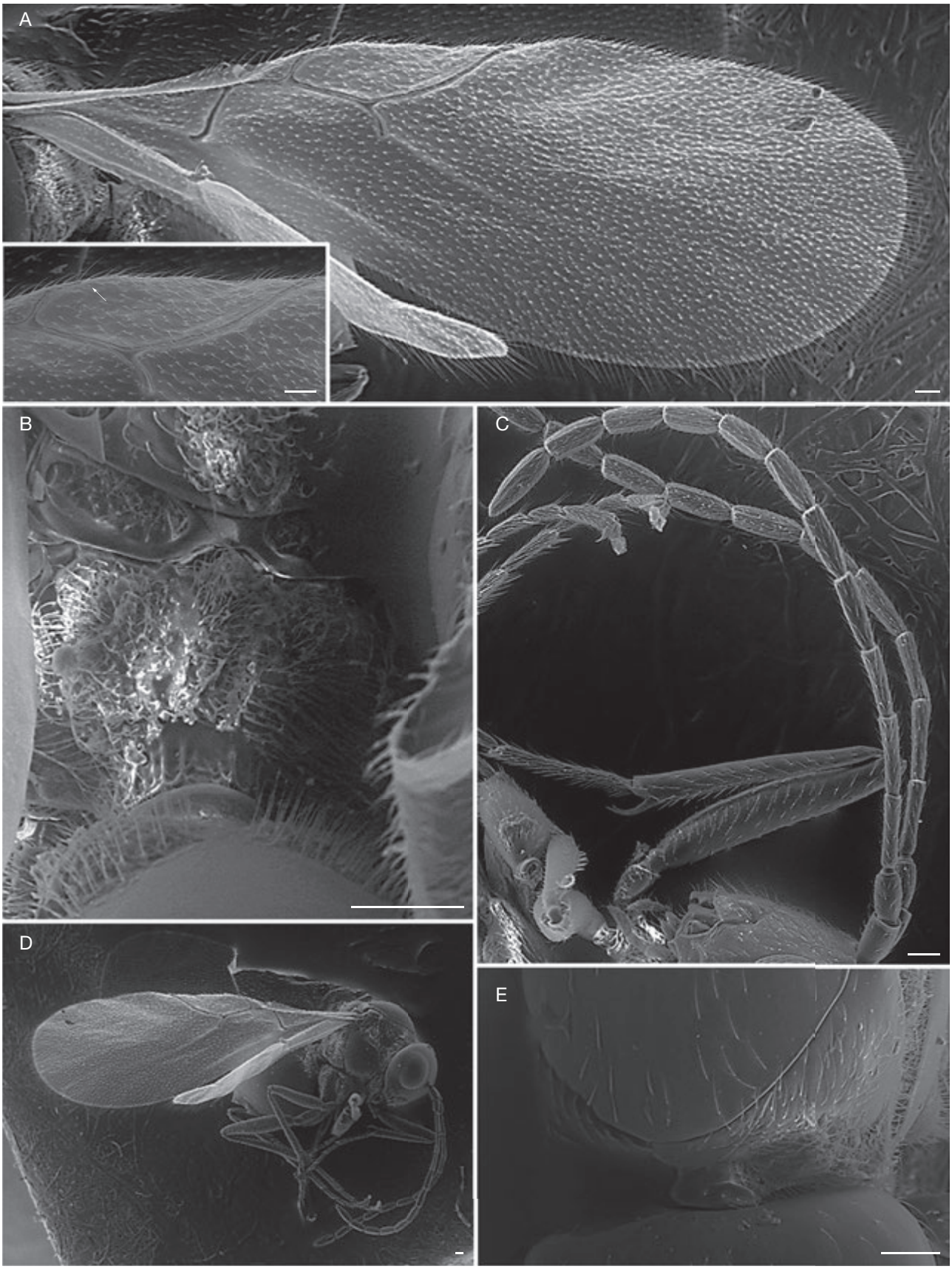

Fig. 4. — *Alloxysta alpina* Ferrer-Suay & Pujade-Villar, n. sp.: **A**, Forewing; **B**, propodeum; **C**, antennae; **D**, body; **E**, pronotum. Scale bars: 50 µm.

than F2, F2 subequal to F3 (Fig. 2B), male antenna with rhinaria beginning from F2, F2 slightly curved, F1 longer than pedicel, F1 subequal to F2, F2 shorter than F3. It is similar to *Alloxysta ramulifera* (Thomson, 1862), but the two species can be differentiated by: rhinaria beginning from F3 in *A. arcuata* and from F4 in *A. ramulifera*; pronotal carinae well defined and visible in *A. arcuata*, rather than small and sometimes difficult to see under the pubescence in *A. ramulifera*; radial cell 2.3 × longer than wide in *A. arcuata* (Fig. 3B), but only 2.0 × in *A. ramulifera*; propodeal carinae with curved sides in *A. arcuata*, but with straight sides in *A. ramulifera*.

Alloxysta brachycera Hellén, 1963
(Figs 2C; 3C)

Alloxysta brachycera Hellén, 1963: 14.

Material examined. — (11♀). M09-BOR1400-T3-M1: 4♀; M09-BOR1400-T5-M1: 1♀; M09-BOR2000-T4-M1: 2♀; M09-SES2000-T3-M1: 1♀; M09-SES2000-T5-M1: 1♀; M10-CAI2000-T1-M1: 1♀; M10-CAI2000-T3-M1: 1♀. Material deposited at MNHN, except for 5♀ deposited at UB.

Distribution. — Previously known from Finland (Hellén 1963). First record from France.

Hosts. — Unknown.

Diagnosis. — *Alloxysta brachycera* is characterized by: a completely open radial cell, 2.7 × longer than wide (Fig. 3C), pronotal carinae present, propodeal carinae absent, female antenna with rhinaria beginning from F4, F1 longer than pedicel and F2, F2 longer than F3, F3 shorter than F4 (Fig. 2C). Male unknown. Similar to *Alloxysta nigrita* (Thomson, 1862), but the two species can be differentiated by: F2 longer than F3 in *A. brachycera* (Fig. 2C), whereas F2 is shorter than F3 in *A. nigrita* (Fig. 2N); proportions of radial cell: 2.7 × longer than wide in *A. brachycera* (Fig. 3C), versus 2.9 × in *A. nigrita* (Fig. 3N).

Alloxysta brevis (Thomson, 1862)
(Figs 2D; 3D; 5B)

Allotria brevis Thomson, 1862: 408.

Material examined. — (21♀). M9-BOR1400-T1-M1: 1♀; M9-BOR1400-T3-M1: 1♀; M9-BOR1400-T5-M1: 1♀; M9-BOR2000-T3-M1: 1♀; M9-BOR2000-T4-M2: 1♀; M9-BOR2000-T5-M2: 1♀; M9-SES1400-T3-M1: 1♀; M9-SES1400-T2-M2: 2♀; M9-SES1400-T3-M2: 3♀; M9-SES1400-T4-M2: 1♀; M9-SES1400-T6-M2: 3♀; M9-SES2000-T3-M1: 1♀; M9-SES2000-T4-M1: 1♀; M9-SES2000-T3-M2: 1♀; M10-CAI1400-T5-M2: 1♀; M10-CAI1400-T4-M2: 1♀. Material deposited at MNHN, except for 10♀ deposited at UB.

Distribution. — Previously known from the Palaearctic (Ferrer-Suay *et al.* 2012b). First record from France.

Hosts. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.*, 2012a).

Diagnosis. — *Alloxysta brevis* is characterized by: a small closed radial cell, 2.1 × longer than wide (Fig. 3D), pronotal carina absent (Fig. 5B), propodeal carinae present forming a plate; female and male antenna with rhinaria beginning from F4; F1 shorter than pedicel and F1-F3 subequal in length (Fig. 2D). It is similar to *Alloxysta darci* (Girault, 1933), but could be differentiated by: antenna shorter than body in *A. brevis*, versus longer in *A. darci*; forewing with marginal setae shorter in *A. brevis* than those in *A. darci*.

Alloxysta castanea (Hartig, 1841)
(Figs 2E; 3E)

Xystus castaneus Hartig, 1841: 352.

Material examined. — (105♀). M9-BOR1400-T1-M1: 1♀; M9-BOR1400-T2-M1: 4♀; M9-BOR1400-T3-M1: 1♀; BOR1400-T4-M1: 1♀; BOR1400-T5-M1: 1♀; BOR1400-T6-M1: 4♀; BOR1400-T8-M1: 1♀; M9-BOR1400-T2-M2: 9♀; M9-BOR1400-T8-M2: 1♀; M9-BOR2000-T2-M1: 1♀; M9-BOR2000-T3-M1: 5♀; M9-BOR2000-T4-M1: 2♀; M9-BOR2000-T6-M1: 3♀; M9-SES1400-T5-M1: 1♀; M9-SES1400-T1-M2: 2♀; M9-SES1400-T2-M2: 7♀; M9-SES1400-T3-M2: 12♀; M9-SES1400-T4-M2: 1♀; M9-SES1400-T6-M2: 3♀; M9-SES1400-T8-M209: 2♀; M9-SES2000-T3-M1: 4♀; M9-SES2000-T4-M1: 10♀; M9-SES2000-T5-M1: 4♀; M9-SES2000-T4-M2: 1♀; M9-SES2000-T6-M2: 1♀; M10-CAI1400-T2-M1: 1♀; M10-CAI1400-T5-M1: 1♀; M10-CAI1400-T6-M1: 3♀; M10-CAI1400-T7-M1: 2♀; M10-CAI1400-T1-M2: 2♀; M10-CAI1400-T2-M2: 1♀; M10-CAI1400-T3-M2: 1♀; M10-CAI1400-T4-M2: 2♀; M10-CAI1400-T6-M2: 2♀; M10-CAI1400-T7-M2: 1♀; M10-CAI2000-T1-M1: 2♀; M10-CAI2000-T6-M1: 1♀; M10-CAI2000-T1-M2: 1♀; M10-CAI2000-T2-M2: 1♀; M10-CAI2000-T3-M2: 2♀. Material deposited at MNHN except for 50♀ deposited at UB.

Distribution. — Species known from the Holarctic region (Ferrer-Suay *et al.* 2012a). Previously cited in France by Kieffer (1902a: 10, 15; 1904: 595), De Gaulle (1908: 26) and Cavro (1954: 12).

Hosts. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

Diagnosis. — *Alloxysta castanea* is characterized by: a partially open radial cell being 2.4 × longer than wide (Fig. 3E), pronotal and propodeal carinae present, male and female antenna with rhinaria beginning from F3, F2-F4 subequal in length (Fig. 2E), F1 and F2 slightly curved in male. It is similar to *Alloxysta aurata* Belizin, 1968 but the two species can be differentiated by the ratio between F2 and F3: F2 subequal to F3 in *A. castanea* but F2 shorter than F3 in *A. aurata* and the proportions of the radial cell: 2.3 × longer than wide in *A. castanea*, versus 3.0 × in *A. aurata*.

Alloxysta circumscripta (Hartig, 1841)
(Figs 2F; 3F)

Xystus circumscriptus Hartig, 1841: 352.

Material examined. — (12♀). M9-BOR1400-T1-M1: 3♀; M9-BOR1400-T3-M1: 1♀; M9-BOR1400-T8-M2: 1♀; M9-BOR2000-T6-M1: 2♀; M9-SES1400-T2-M2: 4♀; M9-SES2000-T4-M2: 1♀. 6 ♀ deposited at MNHN and 6♀ at UB.

Distribution. — Species known from the Palaearctic region (Ferrer-Suay *et al.* 2012a). Previously cited from France by De Gaulle (1908: 26).

Hosts. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

Diagnosis. — *Alloxysta circumscripta* is characterized by its closed radial cell being 2.5 × longer than wide (Fig. 3F), pronotal carinae present, propodeal carinae absent, female antenna with rhinaria beginning from F5, F2 shorter than F3, F3 shorter than F4 (Fig. 2F), male antenna rhinaria beginning from F4, F2 longer than F3, F3 shorter than F4. It is similar to *Alloxysta consobrina* (Zetterstedt, 1838) but they can be differentiated by the proportion between flagellomeres:

F1 subequal to F2, F2 shorter or subequal to F3 in *A. circumscripta* (Fig. 2F), versus F1 longer than F2, F2 subequal to F3 in *A. consobrina* (Fig. 2I); proportions of radial cell: 2.5 × longer than wide in *A. circumscripta* (Fig. 3F) but 2.7 in *A. consobrina* (Fig. 3I).

Alloxysta citripes (Thomson, 1862)
(Figs 2G; 3G; 6F)

Allotria citripes Thomson, 1862: 410.

MATERIAL EXAMINED. — (11♀). M9-BOR1400-T2-M1: 1♀; M9-SES1400-T1-M2: 1♀; M9-SES1400-T2-M2: 1♀; M9-SES1400-T3-M2: 1♀; M9-SES1400-T4-M2: 1♀; M9-SES1400-T6-M2: 1♀; M9-SES2000-T4-M1: 2♀; M9-SES2000-T2-M2: 2♀; M10-CAI2000-T4-M1: 1♀. Material deposited at MNHN except for 5♀ deposited at UB.

DISTRIBUTION. — Species known from the Palaearctic region (Ferrer-Suay *et al.* 2012a). Previously cited from France by Kieffer 1904a: 600 and De Gaulle 1908: 26.

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Alloxysta citripes* is characterized by its partially open and small radial cell being 2.1 × longer than wide (Fig. 3G), pronotal carinae present, propodeal carinae present forming a plate but not protruding, female antenna with rhinaria beginning from F4, F1 subequal to pedicel and longer than F2, F2-F4 subequal in length (Fig. 2G), male antenna with rhinaria beginning from F1, pedicel-F3 subequal, F3 slightly shorter than F4. Similar to *Alloxysta postica* (Hartig, 1841) but the two species can be differentiated by the shape of propodeal carinae: the carinae are not protruding in *A. citripes* (Fig. 6F), whereas they are clearly visible and forming a plate in *A. postica*; proportions of radial cell: 2.1 × longer than wide in *A. citripes* (Fig. 3G), versus 2.5 × in *A. postica* (Fig. 3Q).

Alloxysta consobrina (Zetterstedt, 1838)
(Figs 2I; 3I)

Cynips consobrina Zetterstedt, 1838: 410.

MATERIAL EXAMINED. — (16♀). M09-BOR2000-T4-M1: 1♀; M09-SES1400-T1-M2: 4♀; M09-SES1400-T2-M2: 7♀; M09-SES1400-T3-M2: 2♀; M09-SES1400-T6-M2: 1♀; M10-CAI2000-T1-M1: 1♀. Eight ♀ deposited at MNHN and 8♀ at UB.

DISTRIBUTION. — Cosmopolitan. Previously cited from France by Kieffer (1902a: 16) and De Gaulle (1908: 26). *Alloxysta consobrina* was previously cited in France as *Alloxysta fuscicornis* (Hartig, 1841), a well-known cosmopolitan species. These two homonymous species were recently synonymized by Ferrer-Suay *et al.* (2013).

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Alloxysta consobrina* is characterized by: radial cell 2.7 × longer than wide (Fig. 3I), pronotal carinae present, propodeal carinae absent, male and female antenna with rhinaria beginning from F4, F2 longer than F3, F3 shorter than F4 (Fig. 2I), F1-F3 bowed in male. Similar to *A. circumscripta*, but the two species can be differentiated by the proportion between flagellomeres: F1 longer than F2, F2 subequal to F3 in *A. consobrina* (Fig. 2I), versus F1 subequal to F2, F2 shorter or subequal to F3 in *A. circumscripta* (Fig. 2F); proportions of radial cell: 2.7 × longer than wide in *A. consobrina* (Fig. 3I) but 2.5 × in *A. circumscripta* (Fig. 3F).

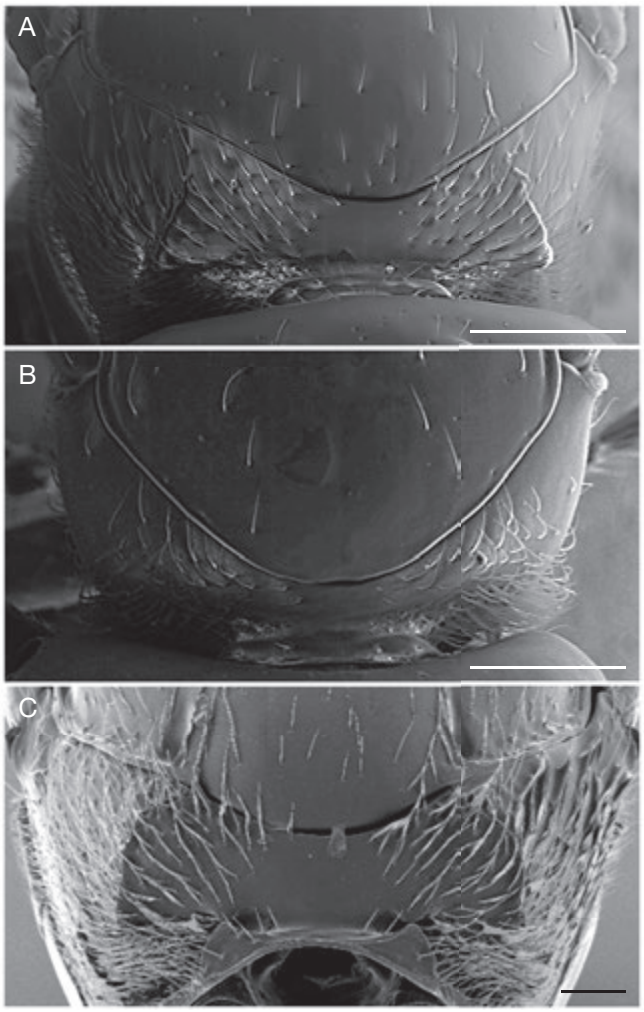

FIG. 5. — Types of pronota: **A**, *A. arcuata* (Kieffer, 1902); **B**, *A. brevis* (Thomson, 1862); **C**, *P. americana* Baker, 1896. Scale bars: 50 µm.

Alloxysta fracticornis (Thomson, 1862)
(Figs 2H; 3H)

Allotria fracticornis Thomson, 1862: 408.

MATERIAL EXAMINED. — (2♂ & 8♀). M9-BOR1400-T4-M1: 1♂; M9-SES1400-T3-M2: 2♀; M9-SES1400-T6-M2: 1♀; M9-SES2000-T2-M1: 1♂; M9-SES2000-T4-M1: 2♀; M9-SES2000-T5-M1: 2♀; M9-SES2000-T3-M1: 1♀. Material deposited at MNHN except for 1♂ & 4♀ deposited at UB.

DISTRIBUTION. — Previously known from the Palaearctic region (Ferrer-Suay *et al.* 2012a). First record from France.

HOSTS. — Unknown.

DIAGNOSIS. — *Alloxysta fracticornis* is characterized by its closed radial cell being 2.2 × longer than wide (Fig. 3H), pronotal carinae absent, propodeal carinae present, male and female with rhinaria beginning from F3, F1-F3 subequal in length (Fig. 2H), F3 curved in male. Similar to *Alloxysta mullensis* (Cameron, 1883), but the two species can be differentiated by the ratio between F1 and pedicel: F1 longer than pedicel in *A. fracticornis* (Fig. 2H), versus F1 subequal to pedicel in *A. mullensis* (Fig. 2M); F1-F3 subequal in length in *A. fracticornis* (Fig. 2H) but F1 longer than F2 and F2 subequal

to F3 in *A. mullensis* (Fig. 2M); male antenna with F3 curved in *A. fracticornis* but without any curved flagellomere in *A. mullensis*.

Alloxysta franca
Ferrer-Suay & Pujade-Villar, n. sp.
(Fig. 7)

TYPE MATERIAL. — (1♀). **Holotype** ♀ deposited at MNHN with the following labels: M09-BOR2000-T1-M1, Valdeblore, Col de Salèse, larch forest, Alt: 2058 m, 10-24.VI.2009.

ETYMOLOGY. — The new species is named after the country where it was first found, France.

DISTRIBUTION. — France.

HOSTS. — Unknown.

DIAGNOSIS. — *Alloxysta franca* Ferrer-Suay & Pujade-Villar, n. sp. is characterized by its completely open radial cell being 2.4 × longer than wide, pronotal carinae absent, propodeal carinae forming a plate, female antenna with rhinaria beginning from F4, F1 longer than F2, F2 subequal in F3, F3 shorter than F4. Similar to *Alloxysta pilae* Ferrer-Suay n. sp., but the two species can be differentiated by the pronotal carinae: absent in *A. franca* Ferrer-Suay & Pujade-Villar, n. sp., but present in *A. pilae* Ferrer-Suay, n. sp.; proportions of radial cell: 2.4 × longer than wide in *A. franca* Ferrer-Suay & Pujade-Villar, n. sp., *vs* 2.2 × in *A. pilae* Ferrer-Suay, n. sp.

DESCRIPTION

Length

Female (Fig. 7E): 0.9 mm. Male unknown.

Coloration

Head, mesosoma and metasoma yellowish brown. Scape, pedicel, F1-F3 dark yellow, F4-F11 yellowish brown. Legs yellow and veins yellowish brown.

Head

Transversely ovate, smooth and shiny, slightly wider than high in front view. Face densely hairy; setae present below and between toruli. Frons and vertex glabrous. Transfacial line 1.4 × height of compound eye. Malar space 0.6 × height of compound eye.

Antenna

Female: 13-segmented, filiform. All antennomeres covered with sparse setae. F1-F3 smooth and thinner than remaining flagellomeres; F4-F11 with rhinaria and club shaped. Antennal formula: 2.5 (1.4); 2.3 (0.9); 1.7 (0.9); 1.8 (1.0); 2.8 (1.5) (Fig. 7B). Male unknown.

Mesosoma

Pronotum hairy, setae less abundant on distolateral corners, pronotum without carinae (Fig. 7D). Mesoscutum smooth and shiny, round in dorsal view, with few scattered setae and two lines of setae on both sides. Scutellum smooth and shiny with scattered setae, setae more abundant at scutellum apex. Height of mesopleural triangle along anterior margin 1.3 × height of mesopleuron. Propodeum densely hairy, with two carinae present forming a plate and few setae on top (Fig. 7F).

Forewing

Longer than body, 1.5 × longer than mesosoma and metasoma together. Covered with dense pubescence; marginal setae present (Fig. 7A). Open radial cell 2.4 × longer than wide (Fig. 7C). R1 short and slightly curved; Rs long and straight.

Metasoma

Proximal part with an incomplete ring of setae, glabrous in the centre and wider laterally. Rest of metasoma smooth and shiny with terga clearly visible.

Alloxysta longipennis (Hartig, 1841)
(Figs 2J; 3J)

Xystus longipennis Hartig, 1841: 352.

MATERIAL EXAMINED. — (1♂ & 5♀). M09-BOR1400-T3-M1: 1♂; M09-BOR1400-T5-M1: 1♀; M09-SES1400-T3-M1: 1♀; M09-SES2000-T3-M1: 1♀; M09-SES2000-T6-M2: 1♀; M10-CAI1400-T7-M2: 1♀. Material deposited at MNHN except for 2♀ deposited at UB.

DISTRIBUTION. — Previously known from Germany (Ferrer-Suay *et al.* 2012a). First record from France.

HOSTS. — Unknown.

DIAGNOSIS. — *Alloxysta longipennis* is characterized by: partially open radial cell, 2.6 × longer than wide (Fig. 3J), pronotal and propodeal carinae present, forming a plate with straight sides, female with rhinaria beginning from F3, F1 longer than pedicel and F2, F2 subequal to F3, F3 shorter than F4 (Fig. 2J). Male unknown. Similar to *Alloxysta melanogaster* (Hartig, 1840), but the two species can be differentiated by the proportions between flagellomeres in female: F1 longer than pedicel and F2, F2 subequal to F3 in *A. longipennis* (Fig. 2J), whereas pedicel-F3 subequal in *A. melanogaster* (Fig. 2L); and by the size of radial cell: 2.6 × longer than wide in *A. longipennis* (Fig. 3J), versus 2.3 × in *A. melanogaster* (Fig. 3L).

Alloxysta macrophadna (Hartig, 1841)
(Figs 2K; 3K)

Xystus macrophadnus Hartig, 1841: 352.

MATERIAL EXAMINED. — (1♂ & 25♀). M9-BOR1400-T2-M1: 2♀; M9-BOR1400-T3-M1: 1♀; M9-BOR2000-T4-M1: 2♀; M9-BOR2000-T7-M1: 1♀; M9-SES1400-T2-M1: 1♀; M09-SES1400-T2-M2: 1♀; M09-SES1400-T3-M2: 1♀; M09-SES1400-T4-M2: 1♀; M9-SES2000-T2-M1: 1♀; M9-SES2000-T3-M1: 1♀; M9-SES2000-T4-M1: 1♀; M9-SES2000-T5-M1: 1♀; M10-CAI1400-T1-M1: 2♀; M10-CAI2000-T2-M1: 1♀; M10-CAI2000-T4-M1: 1♀; M10-CAI2000-T5-M1: 1♂; M10-CAI2000-T6-M1: 1♀; M10-CAI2000-T1-M2: 1♀; M10-CAI2000-T2-M2: 3♀; M10-CAI1400-T3-M2: 2♀. Material deposited at MNHN, except for 10♀ deposited at UB.

DISTRIBUTION. — Species known from the Palaearctic region (Ferrer-Suay *et al.* 2012a). Previously cited from France by Kieffer (1902a: 10) and De Gaulle (1908: 26).

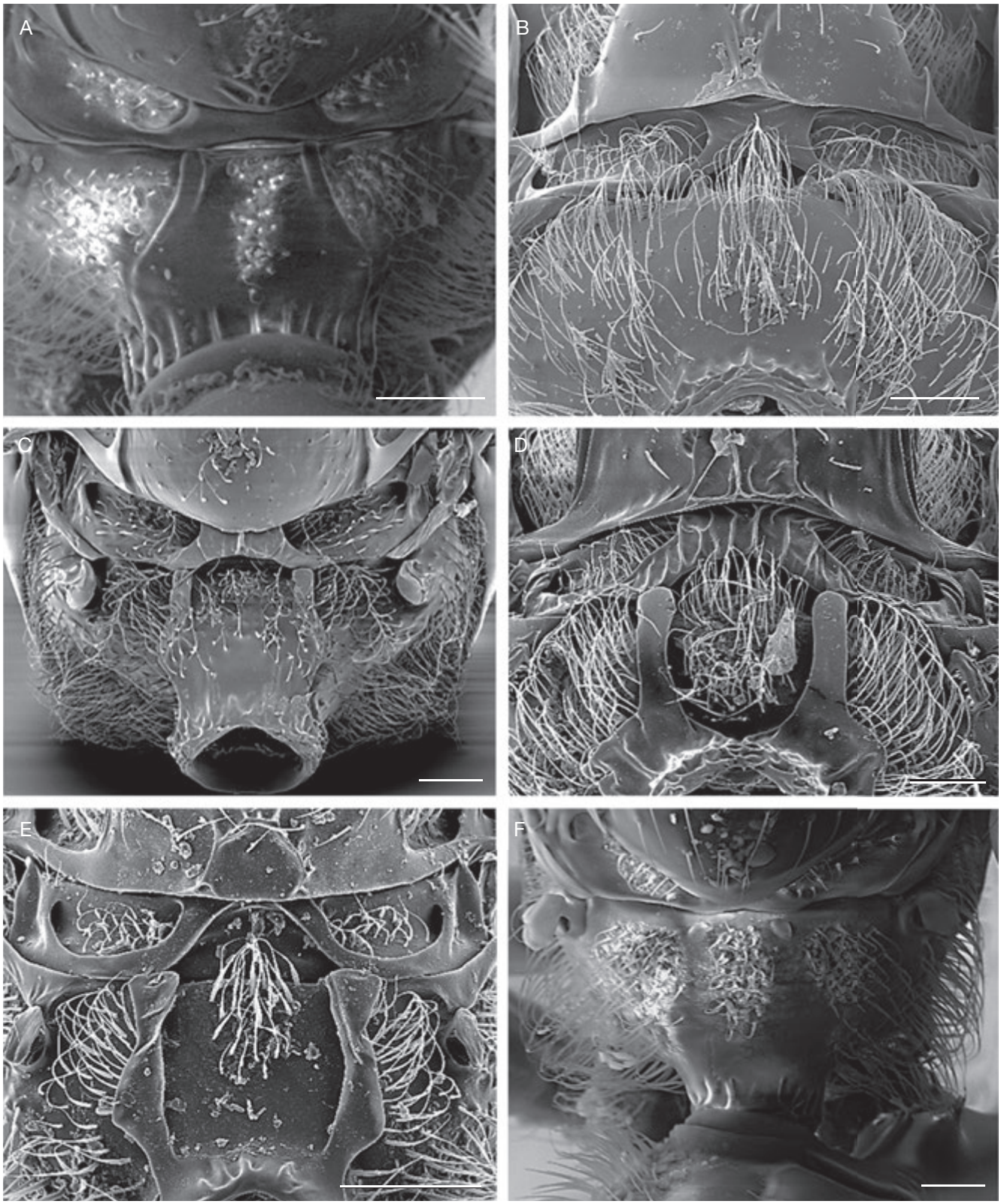

FIG. 6. — Types of propodea: **A**, *A. arcuata* (Kieffer, 1902); **B**, *A. victrix* (Westwood, 1833); **C**, *P. villosa* (Hartig, 1841); **D**, *A. trapezoidea* (Hartig, 1841); **E**, *D. subclavata* Förster, 1869; **F**, *A. citripes* (Thomson, 1862). Scale bars: 50 µm.

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.*, 2012a).

DIAGNOSIS. — *Alloxysta macrophadna* is characterized by: a large, partially open radial cell, 3.0 × longer than wide (Fig. 3K), pronotal carinae present, propodeal carinae absent, female antenna with rhinaria beginning from F4, F1 longer than pedicel and F2, F2 shorter than F3, F3 shorter than F4 (Fig. 2K), male antenna with rhinaria beginning from F3, F2 and F3 clearly curved, F1 longer than pedicel and subequal to F2, F2 longer than F3, F3 longer than F4. Similar to *Alloxysta obscurata* (Hartig, 1840), but the two species can be differentiated by the shape of flagellomeres and their relative proportions: F1 subequal to F2, F2 longer than F3 and F3 subequal to F4 in *A. macrophadna* (Fig. 2K) while F1 longer than F2, F2 shorter than F3 and F3 shorter than F4 in *A. obscurata* (Fig. 2O); F2 and F3 strongly curved in *A. macrophadna* male, but without any curved flagellomere in *A. obscurata* male; proportions of radial cell 3.0 × longer than wide in *A. macrophadna* (Fig. 3K), versus 2.7 × in *A. obscurata* (Fig. 3O).

Alloxysta melanogaster (Hartig, 1840)
(Figs 2L; 3L)

Xystus melanogaster Hartig, 1840: 200.

MATERIAL EXAMINED. — (7♀). M09-SES1400 T2-M2, 30.VI-10.VII.2009: 1♀; M09-SES2000-T4-M1, 23.VII-07.VIII.2009: 2♀; M09-BOR1400-T2-M1, 24.VI-09.VII.2009: 1♀; M10-CAI1400-T7-M1, 30.IX-15.X.2010: 2♀; M10-CAI2000-T3-M1, 31.VII-16.VIII.2010: 1♀. Material deposited at MNHN, except for 3♀ deposited at UB.

DISTRIBUTION. — Species known from the Palaearctic region (Ferrer-Suay *et al.* 2012a). Previously cited from France by De Gaulle (1908: 26) and Dalla Torre & Kieffer (1910: 279).

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Alloxysta melanogaster* is characterized by: a partially open radial cell, 2.3 × longer than wide (Fig. 3L), pronotal and propodeal carinae present, female antenna with rhinaria beginning from F3, F1 subequal to pedicel, F1 longer than F2, F2 subequal to F3, F4 longer than F3 (Fig. 2L), male antenna with rhinaria beginning from F2, F1 longer than pedicel and F2, F2-F4 subequal in length. Similar to *A. longipennis*, but the two species can be differentiated by the proportion between flagellomeres in female: pedicel-F3 subequal in *A. melanogaster* (Fig. 2L) while F1 longer than pedicel and F2, F2 subequal to F3 in *A. longipennis* (Fig. 2J); size of radial cell 2.3 × longer than wide in *A. melanogaster* (Fig. 3L) but 2.6 × in *A. longipennis* (Fig. 3J).

Alloxysta mullensis (Cameron, 1883)
(Figs 2M; 3M)

Allotria mullensis Cameron, 1883: 366.

MATERIAL EXAMINED. — (1♂ & 21♀). M09-SES1400-T3-M2: 6♀; M09-SES1400-T6-M2: 1♀; M09-SES1400-T1-M2: 2♀; M09-SES1400-T4-M2: 2♀; M09-SES2000-T3-M1: 3♀; M9-SES2000-T6-M2: 1♀; M9-BOR2000-T4-M1: 1♀; M9-BOR1400 T3-M1: 1♀; M10-CAI2000 T1-M1: 1♀; M10-CAI1400-T7-M2: 1♂; M10-CAI1400 T4-M2: 1♀; M10-CAI1400 T7-M1: 1♀. Material deposited at MNHN except for 10♀ deposited at UB.

DISTRIBUTION. — Species previously known from the Palaearctic region (Ferrer-Suay *et al.* 2012b). First record from France.

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Alloxysta mullensis* is characterized by: a closed radial cell, 2.2 × longer than wide (Fig. 3M), pronotal carinae absent, propodeal carinae present forming a plate, male and female with the rhinaria beginning from F4, F1 longer than F2, F2 subequal to F3, F3 shorter than F4 (Fig. 2M). Similar to *A. fracticornis* , but the two species can be differentiated by their antennae; ratio between F1 and pedicel: F1 subequal to pedicel in *A. mullensis* (Fig. 2M) while F1 longer than pedicel in *A. fracticornis* (Fig. 2H); proportion between flagellomeres: F1 longer than F2 and F2 subequal to F3 in *A. mullensis* female (Fig. 2M) but F1-F3 subequal in length in *A. fracticornis* female (Fig. 2H); without any flagellomere curved in *A. mullensis* male but with F3 curved in *A. fracticornis* male.

Alloxysta nigrita (Thomson, 1862)
(Figs 2N; 3N)

Allotria nigrita Thomson, 1862: 409.

MATERIAL EXAMINED. — (1♀). M9-BOR2000-T8-M2: 1♀. Specimen deposited at MNHN.

DISTRIBUTION. — Species known from the Palaearctic (Ferrer-Suay *et al.* 2012a). Previously cited from France by Kieffer (1902b: 44).

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Alloxysta nigrita* is characterized by: a completely open radial cell, 2.9 × longer than wide in both male and female (Fig. 3N), pronotal carinae present, propodeal carinae absent, female antenna with rhinaria beginning from F4 in both male and female, female antenna with F1 longer than pedicel and F2, F2 shorter than F3, F3 longer than F4 (Fig. 2N), male antenna with F1 longer than pedicel and subequal to F2, F2 longer or subequal to F3, F3 shorter than F4. Similar to *A. brachycera* , but the two species can be differentiated by the ratio between F2 and F3: F2 shorter than F3 in *A. nigrita* (Fig. 2N) while F2 longer than F3 in *A. brachycera* (Fig. 2C); proportions of radial cell 2.9 × longer than wide in *A. nigrita* (Fig. 3N) but 2.7 × in *A. brachycera* (Fig. 3C).

Alloxysta obscurata (Hartig, 1840)
(Figs 2O; 3K)

Xystus obscuratus Hartig, 1840: 200.

MATERIAL EXAMINED. — (3♀). M9-BOR2000-T6-M1: 1♀; M9-BOR2000-T3-M1: 1♀; M9-BOR1400-T2-M1: 1♀. 2 ♀ deposited at MNHN and 1♀ at UB.

DISTRIBUTION. — Species known from Holarctic region (Ferrer-Suay *et al.* 2012a). Previously cited from France by Kieffer (1904: 597) and De Gaulle (1908: 26).

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

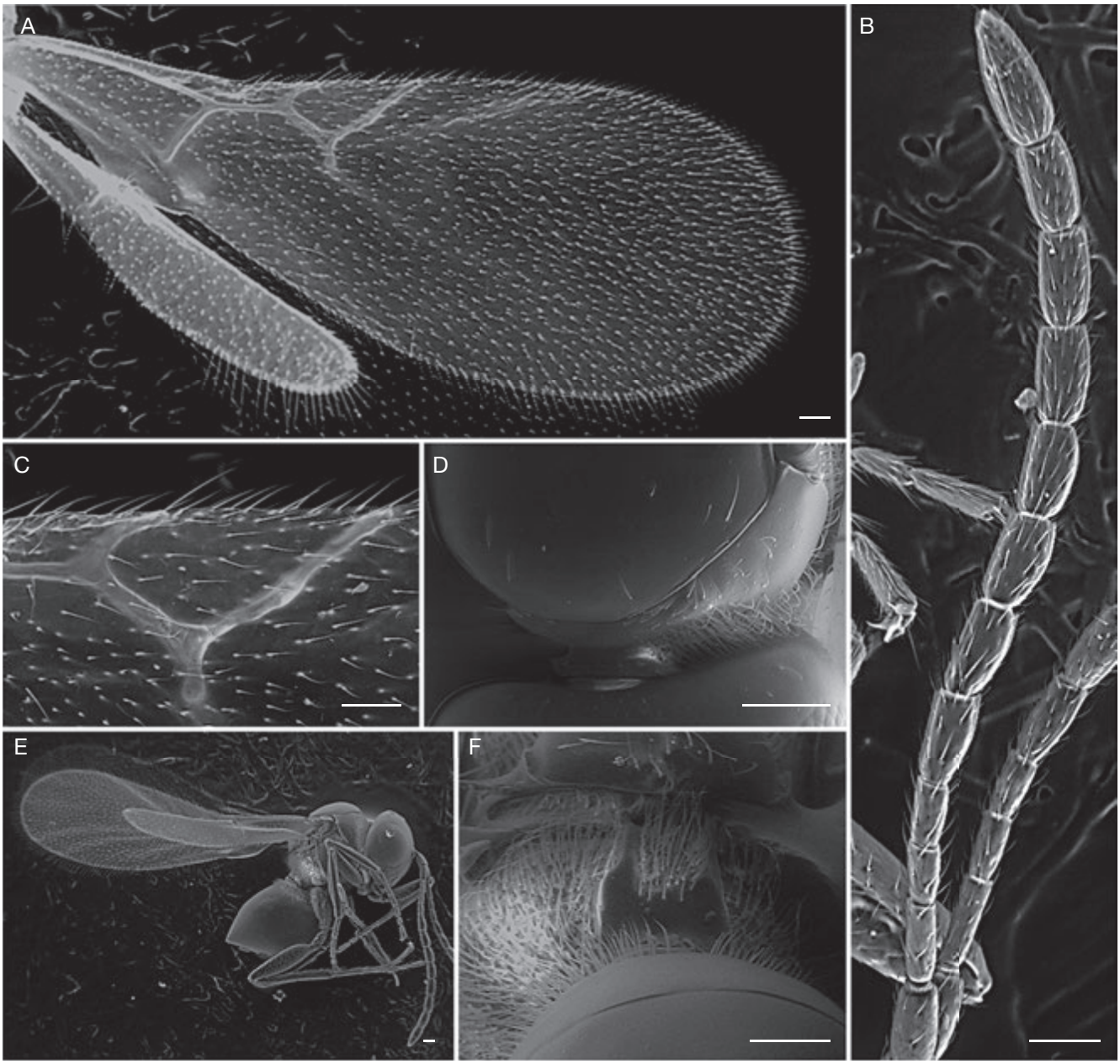

Fig. 7. — *Alloxysta franca* Ferrer-Suay & Pujade-Villar, n. sp.: **A**, forewing; **B**, antenna; **C**, radial cell; **D**, pronotum; **E**, body; **E**, propodeum. Scale bars: 50 µm.

Diagnosis. — *Alloxysta obscurata* is characterized by: partially open radial cell, 2.7 × longer than wide (Fig. 3O); pronotal carinae present, propodeal carinae absent; female antenna with rhinaria beginning from F3; F1 longer than pedicel and F2, F2 shorter than F3, F3 shorter than F4 (Fig. 2O); male antenna with rhinaria beginning from F4, F2 slightly curved, F1 longer than pedicel and F2, F2 longer than F3 and F3 longer than F4. Similar to *A. macrophadna*, but the two species can be differentiated by the shape and proportion between flagellomeres: F1 longer than F2, F2 shorter than F3 and F3 shorter than F4 in *A. obscurata* (Fig. 2O), versus F1 subequal to F2, F2 longer than F3 and F3 subequal to F4 in *A. macrophadna* (Fig. 2K); male antenna without any curved flagellomere in *A. obscurata* but with F2 and F3 strongly curved in *A. macrophadna*; proportions of radial cell 2.7 × longer than wide in *A. obscurata* (Fig. 3O) but 3.0 × in *A. macrophadna* (Fig. 3K).

Alloxysta pilae
Ferrer-Suay, n. sp.
(Fig. 8)

Type material. — (1♀). **Holotype.** ♀ deposited at MNHN, labelled M10-CAI1400-T6-M1, Saorge (06), Forêt de Caïros, fir forest, Alt: 1379, 15-30.IX.2010.

Etymology. — The new species is dedicated to the mother of the first author, to thank her for her constant support.

Distribution. — France.

Hosts. — Unknown.

DIAGNOSIS. — *Alloxysta pilae* Ferrer-Suay, n. sp. is characterized by: a completely open radial cell, 2.2 × longer than wide; pronotal and propodeal carinae present; female antenna with rhinaria beginning from F4, F1 longer than F2, F2 subequal to F3, F3 shorter than F4. Similar to *A. franca* Ferrer-Suay & Pujade-Villar, n. sp., but the two species can be differentiated by the pronotal carinae: present in *A. pilae* Ferrer-Suay, n. sp., versus absent in *A. franca* Ferrer-Suay & Pujade-Villar, n. sp.; proportions of radial cell 2.2 × longer than wide in *A. pilae* Ferrer-Suay, n. sp., versus 2.4 × in *A. franca* Ferrer-Suay & Pujade-Villar, n. sp.

DESCRIPTION

Length

Female: 0.9 mm. Male unknown.

Coloration

Head, mesosoma and metasoma yellowish brown. Scape, pedicel, F1-F3 dark yellow, F4-F11 yellowish brown. Legs yellow and wing venation yellowish brown.

Head

Transversely ovate, smooth and shiny, slightly wider than high in front view. Vertex glabrous, face hairy. Setae present below, between and a few above toruli. Transfacial line 1.1 × height of compound eye. Malar space 0.6 × height of compound eye.

Antenna

Female: 13-segmented, filiform. All flagellomeres sparsely setose. F1-F3 smooth and thinner than remaining flagellomeres; F4-F11 club shaped and with rhinaria. Antennal formula: 2.5 (1.5); 3.1 (0.9); 2.5 (0.9); 2.5 (0.9); 3.4 (1.3) (Fig. 8D).

Mesosoma

Pronotum sparsely setose, with two thick latero-median carinae (Fig. 8C). Mesoscutum smooth and shiny, rounded in dorsal view, with few scattered setae, and two setiferous lines on both sides. Scutellum smooth and shiny, with scattered setae more abundant at scutellum apex. Height of mesopleural triangle along anterior margin 1.4 × the height of mesopleuron. Propodeum densely setose; with two carinae present forming a plate with lateral sides slightly curved and few setae antero-medially (Fig. 8F).

Forewing

Longer than body, 1.6 × longer than mesosoma and metasoma together; covered with dense pubescence; marginal setae present (Fig. 8A). Open radial cell 2.2 × longer than wide (Fig. 8B). R1 short and slightly curved; Rs long and slightly curved.

Metasoma

Proximal part with an incomplete ring of setae, glabrous medially and wider laterally. Rest of metasoma smooth and shiny with terga clearly visible.

Alloxysta pilipennis (Hartig, 1840)
(Figs 2P; 3P)

Xystus pilipennis Hartig, 1840: 199.

MATERIAL EXAMINED. — (8♀). M9-BOR1400-T2-M1: 1♀; M9-BOR1400 T1-M2: 1♀; M09-SES1400-T1-M2: 3♀; M9-SES1400-T2-M2: 2♀; M10-CAI2000-T2-M1: 1♀. 4 ♀ deposited at MNHN and 4♀ at UB.

DISTRIBUTION. — Previously known from the Palaearctic (Ferrer-Suay *et al.* 2012a). First record from France.

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Alloxysta pilipennis* is characterized by: a closed radial cell, 2.5 × longer than wide (Fig. 3P); pronotal and propodeal carinae present; female antenna with rhinaria beginning from F3, F1 longer than pedicel and F2, F2-F4 subequal in length (Fig. 2P). Male unknown. Similar to *Alloxysta pusilla* (Kieffer, 1902), but the two species can be differentiated by the proportion between flagellomeres: F2 subequal to F3 in *A. pilipennis* female (Fig. 2P), versus F2 shorter than F3 in *A. pusilla* female (Fig. 2S); F1-F3 distinctly unequal and without any curved flagellomere in *A. pilipennis* male, as opposed to F1-F3 subequal in length and with slightly curved flagellomere in *A. pusilla* male; proportions of radial cell 2.4 × longer than wide in *A. pilipennis* female (Fig. 3P), versus 2.7 × in *A. pusilla* female (Fig. 3S).

Alloxysta postica (Hartig, 1841)
(Figs 2Q; 3Q)

Xystus posticus Hartig, 1841: 352.

MATERIAL EXAMINED. — (9♀). M9-BOR1400-T1-M1: 1♀; M9-BOR1400-T2-M1: 1♀; M9-BOR1400-T4-M1: 1♀; M9-SES1400-T2-M2: 1♀; M9-SES1400-T3-M2: 1♀; M9-SES1400-T6-M2: 1♀; M9-SES2000-T3-M1: 1♀; M10-CAI1400-T6-M2: 1♀; M10-CAI2000-T7-M2: 1♀. 5♀ deposited at MNHN and 5♀ at UB.

DISTRIBUTION. — Species previously known from the Palaearctic region (Ferrer-Suay *et al.* 2012a). First record from France.

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Alloxysta postica* is characterized by: a partially open radial cell, 2.5 × longer than wide (Fig. 3Q); pronotal carinae and propodeal carinae present; female antenna with rhinaria beginning from F4, pedicel-F4 subequal in length (Fig. 2Q). Male unknown. Similar to *A. citripes*, but the two species can be differentiated by the shape of propodeal carinae: clearly visible and forming a plate in *A. postica*, whereas the carinae are not protruding in *A. citripes* (Fig. 6F); proportions of radial cell 2.5 × longer than wide in *A. postica* (Fig. 3Q) but 2.1 × in *A. citripes* (Fig. 3G).

Alloxysta proxima Belizin, 1962
(Figs 2R; 3R)

Alloxysta proxima Belizin, 1962: 128.

MATERIAL EXAMINED. — (7♀). M9-BOR2000-T5-M2: 1♀; M9-SES2000-T2-M1: 1♀; M9-SES2000-T5-M1: 1♀; M09-SES2000-T3-M2: 1♀; M09-SES2000-T6-M2: 1♀; M10-CAI2000-T1-M1:1♀; M10-CAI2000-T4-M1: 1♀. 3 ♀ deposited at MNHN and 4♀ at UB.

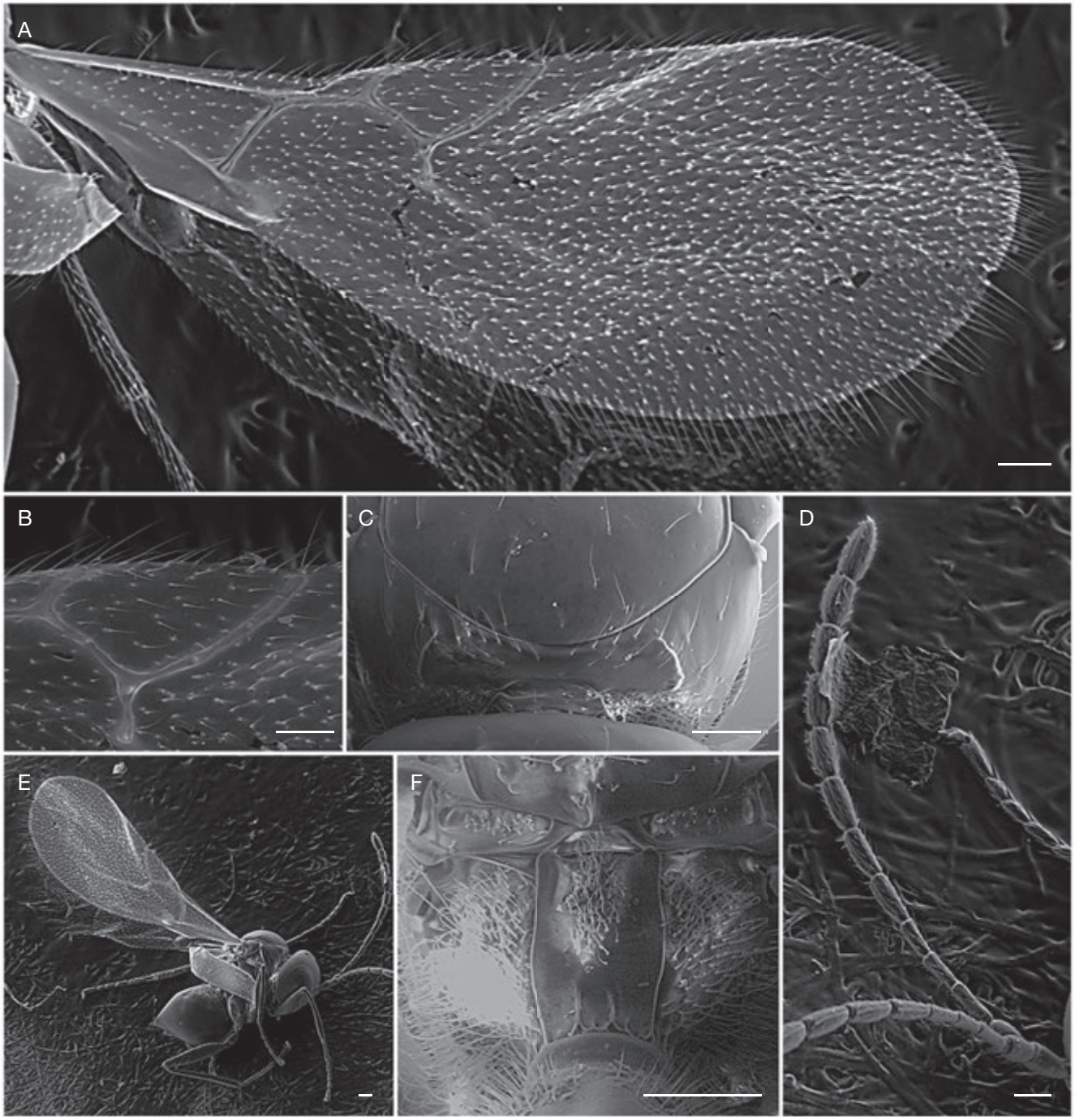

Fig. 8. — *Alloxysta pilae* Ferrer-Suay, n. sp.: **A**, forewing; **B**, radial cell; **C**, pronotum; **D**, antennae; **E**, body; **F**, propodeum. Scale bars: 50 µm.

Distribution. — Species previously known from the Palaearctic (Ferrer-Suay *et al.* 2012a). First record from France.

Hosts. — Unknown.

Diagnosis. — *Alloxysta proxima* is characterized by: a completely open radial cell, 2.3 × longer than wide (Fig. 3R); pronotal carinae and propodeal carinae absent; female antenna with rhinaria beginning from F4, F1 longer than pedicel, F2 longer than F1, F2 longer than F3, F3 subequal to F4 (Fig. 2R). Male unknown. This combination of features is not known in any other species of *Alloxysta*.

Alloxysta pusilla (Kieffer, 1902) (Figs 2S; 3S)

Allotria (*Allotria*) *pusilla* Kieffer, 1902a: 13.

Material examined. — (1♀). M9-SES1400 T2-M2: 1♀. Deposited at MNHN.

Distribution. — Species known from the Palaearctic (Ferrer-Suay *et al.* 2012a). Previously cited from France by Kieffer (1902a: 13) and De Gaulle (1908: 26).

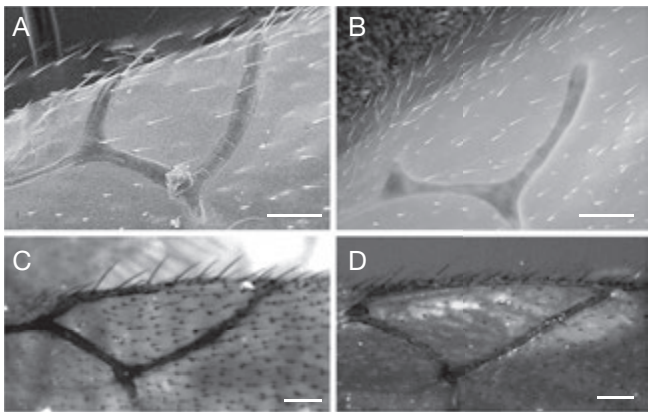

FIG. 9. — Types of radial cells: **A**, *A. trapezoidea* (Hartig, 1841); **B**, *D. subclavata* Förster, 1869; **C**, *P. villosa* (Hartig, 1841); **D**, *P. americana* Baker, 1896. Scale bar: 50 µm.

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Alloxysta pusilla* is characterized by: a closed radial cell, 2.7 × longer than wide in female (Fig. 3S) and 2.4 × in male, pronotal and propodeal carinae present, forming a plate; female antenna with rhinaria beginning from F3, F1 longer than pedicel and F2, F2 shorter than F3, and F3 shorter than F4 (Fig. 2S); male antenna with rhinaria beginning from F1, pedicel-F3 subequal in length, F4 longer than F3, F1-F3 slightly curved. Similar to *A. pilipennis*, but the two species can be differentiated by the proportions between flagellomeres in both male and female: F2 shorter than F3 in *A. pusilla* female (Fig. 2S), versus F2 subequal to F3 in *A. pilipennis* female (Fig. 2P); F1-F3 subequal in length and slightly curved in *A. pusilla* male, versus F1-F3 distinctly unequal and with all flagellomers uncurved in *A. pilipennis* male; proportions of radial cell 2.7 × longer than wide in *A. pusilla* female (Fig. 3S), versus 2.4 × in *A. pilipennis* female (Fig. 3P).

Alloxysta victrix (Westwood, 1833)
(Figs 2T; 3T; 6B)

Allotria victrix Westwood, 1833: 495.

MATERIAL EXAMINED. — (1♂ & 31♀). M9-SES1400-T2-M2: 6♀; M9-SES1400-T4-M2: 1♀; M9-SES1400-M2-TT3: 2♀; M9-SES2000-T5-M1: 1♀; M9-SES2000-T4-M1,: 2♀; M9-SES2000-T2-M1: 1♀; M9-SES2000-T3-M1: 2♀; M9-BOR1400-T3-M1: 1♀; M9-BOR1400-T2-M1: 3♀; M9-BOR1400-T4-M1: 1♂ & 1♀; M9-BOR1400-T2-M2: 1♀; M9-BOR2000-T6-M1: 1♀; M9-BOR2000-T3-M1: 2♀; M9-BOR2000-T4-M1: 1♀; M10-CAI2000-T1-M1: 1♀; M10-CAI2000-T4-M1: 1♀; M10-CAI2000-T2-M1: 2♀; M10-CAI1400-T1-M2: 2♀. Material deposited at MNHN, except for 15♀ deposited at UB.

DISTRIBUTION. — Cosmopolitan (Ferrer-Suay *et al.* 2012a). Previously cited from France by Kieffer (1902a: 15, 16; 1902b: 70; 1904: 600) and De Gaulle (1908: 26).

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Alloxysta victrix* is characterized by: a large closed radial cell, 3.0 × longer than wide (Fig. 3T); pronotal carinae present, propodeum without carinae and lacking setae on longitudinal areas bearing propodeal carinae in other Charipinae species (Fig. 6B), male and female with rhinaria beginning from F3, F1 longer than pedicel and F2, F2-F4 subequal (Fig. 2T), F1-F3 curved in male. Similar to *A. consobrina*, but the two species can be differentiated by the proportions between flagellomeres: F2-F4 subequal in length in *A. victrix* (Fig. 2T), versus F2 subequal to F3 and F3 shorter than F4 in *A. consobrina* (Fig. 2I); proportions of radial cell 3.0 × longer than wide in *A. victrix* (Fig. 3T), versus 2.7 × in *A. consobrina* (Fig. 2T); and the propodeal pubescence: with two longitudinal glabrous areas in *A. victrix*, as opposed to entirely and densely setose in *A. consobrina* the propodeum.

Genus *Apocharips* Fergusson, 1986

Apocharips trapezoidea (Hartig, 1841)
(Figs 6D; 9A; 10A)

Xystus trapezoideus Hartig, 1841: 352.

MATERIAL EXAMINED. — (1♂). M9-SES2000 T4-M1: 1♂. Deposited at MNHN.

DISTRIBUTION. — Previously known from the Palaearctic region (Ferrer-Suay *et al.* 2012a). First record from France. Currently the only species of *Apocharips* known from the Mediterranean Alps.

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Apocharips trapezoidea* is mainly characterized by: a completely open radial cell, 1.0 times as long as wide (Fig. 9A); pronotal and propodeal carinae present (Fig. 6D); apex of scutellum with M-shaped carinae; female antenna with rhinaria beginning from F5, F1 longer than pedicel and F2, F2 subequal to F3, F3 shorter than F4 (Fig. 10A); male antenna with rhinaria beginning from F1, F1 longer than pedicel and F2, F2-F4 subequal in length. It is easily differentiated from the other *Apocharips* species by its radial cell completely open with parallel R1 and Rs veins (Fig. 9A). The most similar *Apocharips* species is *Apocharips hansoni* Menke, 1993, but they can be readily separated by the presence of radial carinae around the clypeus in *A. hansoni*, which are lacking in *A. trapezoidea*.

Genus *Dilyta* Förster, 1869

Dilyta subclavata Förster, 1869
(Figs 9B; 10B)

Dilyta subclavata Förster, 1869: 338.

MATERIAL EXAMINED. — (1♂ & 2♀). M09-BOR1400-T6-M1: 1♀; M09-SES1400-T2-M2: 1♂; M10-CAI1400-T2-M1: 1♀. Material deposited at MNHN, except for 1♀ deposited at UB.

DISTRIBUTION. — Known from Palaearctic region (Ferrer-Suay *et al.* 2012a). Previously cited from France by De Gaulle (1908: 26) and Dalla Torre & Kieffer (1910: 255). Currently the only species of *Dilyta* genus present in the Mediterranean Alps.

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Dilyta subclavata* is mainly characterized by: a completely open radial cell, 1.8 × longer than wide (Fig. 9B); pronotum and propodeal carinae present; apex of scutellum with ∩-shaped carina; female antenna with rhinaria beginning from F6, F1 slightly shorter or subequal to pedicel, F2 subequal to F3, F4 longer than F3 (Fig. 10B); male antenna with rhinaria beginning from F4, F1 slightly

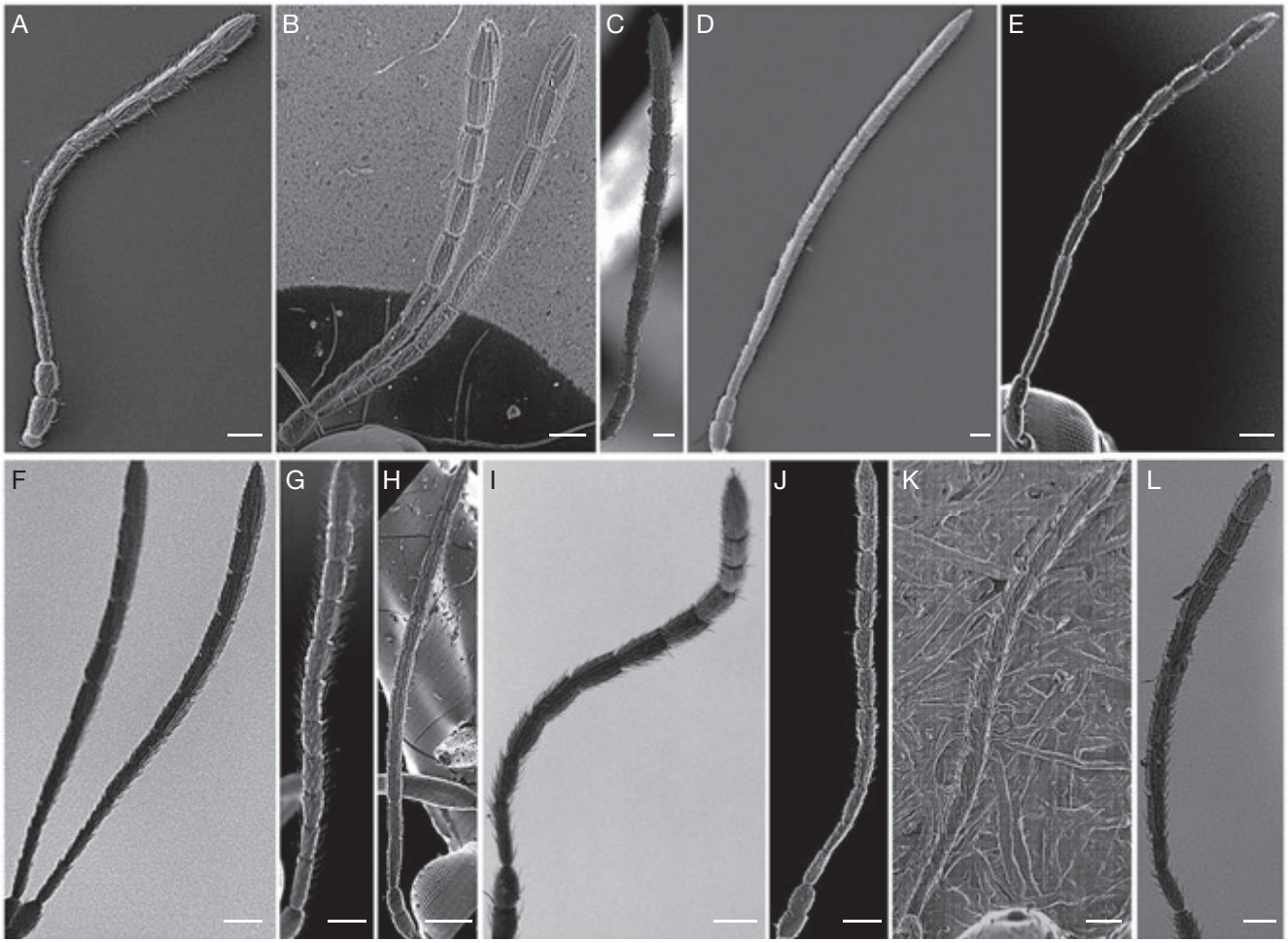

Fig. 10. — Types of antennae: **A**, *A. trapezoidea* (Hartig, 1841); **B**, *D. subclavata* Förster, 1869; **C**, *P. abbreviata* (Thomson, 1877); **D**, *P. americana* Baker, 1896; **E**, *P. calverti* Andrews, 1978; **F**, *P. evenhuisi* Pujade-Villar & Paretas-Martínez, 2006; **G**, *P. gutierrezi* Andrews, 1978; **H**, *P. longicornis* (Hartig, 1840); **I**, *P. stenos* Andrews, 1978; **J**, *P. villosa* (Hartig, 1841); **K**, *P. salicis* (Cameron, 1883); **L**, *P. fuscicornis* (Thomson, 1877). Scale bars: 50 µm.

longer than pedicel, sometimes slightly arched, F2 shorter than F1 and F3, F3 shorter than F1, F1 subequal to F4. This species is easily differentiated from the other *Dilyta* species by the punctuation present on the distal part of its metasoma, F1 slightly shorter or subequal to pedicel, F2 subequal to F3, and F4 longer than F3 (Fig. 10B).

Genus *Phaenoglyphis* Förster, 1869

Phaenoglyphis abbreviata (Thomson, 1877) (10C)

Allotria (*Auloxysta*) *abbreviata* Thomson, 1877: 812.

Material examined. — (1♀). M09-SES1400-T3-M1: 1♀. Deposited at MNHN.

Distribution. — Previously known from the Palaearctic region (Ferrer-Suay *et al.* 2012a). First record from France.

Hosts. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

Diagnosis. — *Phaenoglyphis abbreviata* is characterized by: a closed radial cell, 2.5 × longer than wide; pronotal and propodeal carinae present; notauli present and rounded; scutellar foveae separated by a small and well defined carina; female antenna with rhinaria beginning from F3, F1 subequal to pedicel, F1 longer than F2, F2 shorter than F3, F3 subequal to F4 (Fig. 10C). It is similar to *Phaenoglyphis moldavica* Ionescu, 1969, but the two species can be differentiated by the proportions between flagellomeres: F1 longer than F2, F2 shorter than F3 in *P. abbreviata*, versus F1-F3 subequal in length in *P. moldavica*; shape of scutellar foveae: small, rounded and separated by a wide carina in *P. abbreviata*, but large and separated by a fine carina in *P. moldavica*.

Phaenoglyphis americana Baker, 1896 (Fig. 9D; 10D)

Phaenoglyphis americana Baker, 1896: 131.

Material examined. — (2♀). M09-SES2000-T4-M1: 1♀; M09-SES2000-T6-M2: 1♀. 1 ♀ deposited at MNHN and 1♀ at UB.

Distribution. — Previously known from the Nearctic and Neotropical regions (Ferrer-Suay *et al.* 2012a). First record from France.

Hosts. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Phaenoglyphis americana* is characterized by: a closed radial cell, 2.8 × longer than wide (Fig. 9D); pronotal and propodeal carinae present; notauli present, scutellum with two rounded foveae separated by a carina and open basally; female antenna with rhinaria beginning from F1, flagellum thickened from F2, F1 longer than pedicel, F1-F4 subequal in length, width and shape (Fig. 10D); male antenna with rhinaria and flagellum thickening beginning from F2, F1 curved, longer than pedicel and F2, F2 shorter than F3. Similar to *Phaenoglyphis fuscicornis* (Thomson, 1877), but the two species can be differentiated by: the thickening of flagellum from F2 in *P. americana* female (Fig. 10D), as opposed to from F3 in *P. fuscicornis* (Fig. 10L); the shape of notauli: clearly marked along their entire length in *P. americana*, versus deeply marked anteriorly and weakly posteriorly in *P. fuscicornis*; presence of rhinaria and thickening of flagellum in male: both beginning from F2 in *P. americana*, whereas the thickening begins from F3 and the rhinaria from F5 in *P. fuscicornis*.

Phaenoglyphis calverti Andrews, 1978
(Fig. 10E)

Phaenoglyphis calverti Andrews, 1978: 37.

MATERIAL EXAMINED. — (1♀). M09-SES1400-T6-M2: 1♀. Deposited at MNHN.

DISTRIBUTION. — Previously known from the Nearctic region (Ferrer-Suay *et al.* 2012a). First record from France.

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Phaenoglyphis calverti* is characterized by: a closed radial cell, 2.7 × longer than wide; pronotal and propodeal carinae present; notauli absent; scutellar foveae rounded, separated by a carina and open basally; female antenna with rhinaria beginning from F3, F1 longer than pedicel and F2, F2 shorter than F3, F3 subequal to F4 (Fig. 10E); male antenna with rhinaria beginning from F3, F1 curved; F1 longer than pedicel and F2, F2 slightly shorter than F3. Similar to *Phaenoglyphis insularis* (Belizin, 1973), but the two species can be differentiated by the ratio between F2/F3: F2 shorter than F3 in *P. calverti*, versus F2 longer than F3 in *P. insularis*; shape of propodeal carinae: slightly curved in *P. calverti*, but straight in *P. insularis*; shape of mesoscutum: flat in *P. calverti*, versus very gibbous in *P. insularis*.

Phaenoglyphis evenhuisi
Pujade-Villar & Paretas-Martínez, 2006
(Fig. 10F)

Phaenoglyphis evenhuisi Pujade-Villar & Paretas-Martínez, 2006: 479.

MATERIAL EXAMINED. — (1♀). M09-BOR1400-T2-M1: 1♀. Deposited at MNHN.

DISTRIBUTION. — Previously known from the Palaearctic region (Ferrer-Suay *et al.* 2012a). First record from France.

HOSTS. — Unknown.

DIAGNOSIS. — *Phaenoglyphis evenhuisi* is characterized by: a closed radial cell, 3.0 × longer than wide; pronotal and propodeal carinae present; notauli barely distinct; scutellar foveae oval, well-defined and separated by a carina, each fovea has an internal carina at its posterior margin; female antenna with rhinaria beginning from F4, F1 slightly longer or subequal to pedicel, F1 longer than F2, F2 subequal to F3 and F3 shorter than F4 (Fig. 10F). *Phaenoglyphis evenhuisi* is easily distinguished from the other *Phaenoglyphis* species present in the Mediterranean Alps because it is the only species whose pronotum and mesoscutum are not smooth but entirely covered by a fine reticulate sculpture.

Phaenoglyphis fuscicornis (Thomson, 1877)
(Fig. 10L)

Allotria (*Auloxysta*) *fuscicornis* Thomson, 1877: 813.

MATERIAL EXAMINED. — (1♀). M09-SES1400-T3-M1: 1♀. Deposited at MNHN.

DISTRIBUTION. — Previously known from the Palaearctic region (Ferrer-Suay *et al.* 2012a). First record from France.

HOSTS. — Unknown.

DIAGNOSIS. — *Phaenoglyphis fuscicornis* is characterized by: a closed radial cell, 2.8 × longer than wide in both male and female; pronotal and propodeal carinae present; notauli present, scutellum with two oval scutellar foveae separated by a carina and not delimited basally; female antenna thickened from F3 and with rhinaria beginning from F1, F1 longer than pedicel, F1 slightly longer than F2, F2 slightly shorter than F3, F3 subequal to F4 (Fig. 10L), male antenna thickened from F3 and rhinaria beginning from F5, F1 curved, F1 longer than pedicel and F2, F2 subequal to F3, F3 slightly shorter than F4. Similar to *P. americana*, but the two species can be differentiated by: the thickening of female flagellum beginning from F3 in *P. fuscicornis* (Fig. 10L) and from F2 in *P. americana* (Fig. 10D); shape of notauli: deeply excavated anteriorly and weakly posteriorly in *P. fuscicornis*, as opposed to clearly marked along their entire length in *P. americana*; presence of rhinaria and flagellum thickening in male: thickening begins from F3 and rhinaria from F5 in *P. fuscicornis*, whereas both begin from F2 in *P. americana*.

Phaenoglyphis gutierrezi Andrews, 1978
(Fig. 10G)

Phaenoglyphis gutierrezi Andrews, 1978: 39.

MATERIAL EXAMINED. — (1♀). M09-BOR2000-T5-M2: 1♀. Deposited at MNHN.

DISTRIBUTION. — Previously known from Nearctic region (Ferrer-Suay *et al.* 2012a). First record from France and from the Palaearctic. Faunistic studies have led to significant increases in the known distribution range of some species of Charipinae, including many cases of Palaearctic species being found in the Nearctic region (Ferrer-Suay *et al.*, 2014). Thus all the above studies largely increase the distribution range of some species (with the remaining problem of cryptic species which could be solved with molecular studies).

HOSTS. — Unknown.

DIAGNOSIS. — *Phaenoglyphis gutierrezi* is characterized by: a closed radial cell, 2.8 × longer than wide; pronotal and propodeal carinae present; notauli present; scutellar foveae oval, separated by a carina and not delimited basally; female antenna with rhinaria beginning from F3, F1 longer than pedicel and F2, F2-F4 subequal in length (Fig. 10G). Similar to *Phaenoglyphis salicis* (Cameron, 1883), but the two species can be differentiated by the ratios between flagellomeres: F2-F4 subequal in length in *P. gutierrezi* (Fig. 10G), versus F2 shorter than F3, F3-F4 subequal in length in *P. salicis* (Fig. 10K); shape of scutellar foveae: slightly open basally in *P. gutierrezi* but completely defined and with two apical lines in *P. salicis*.

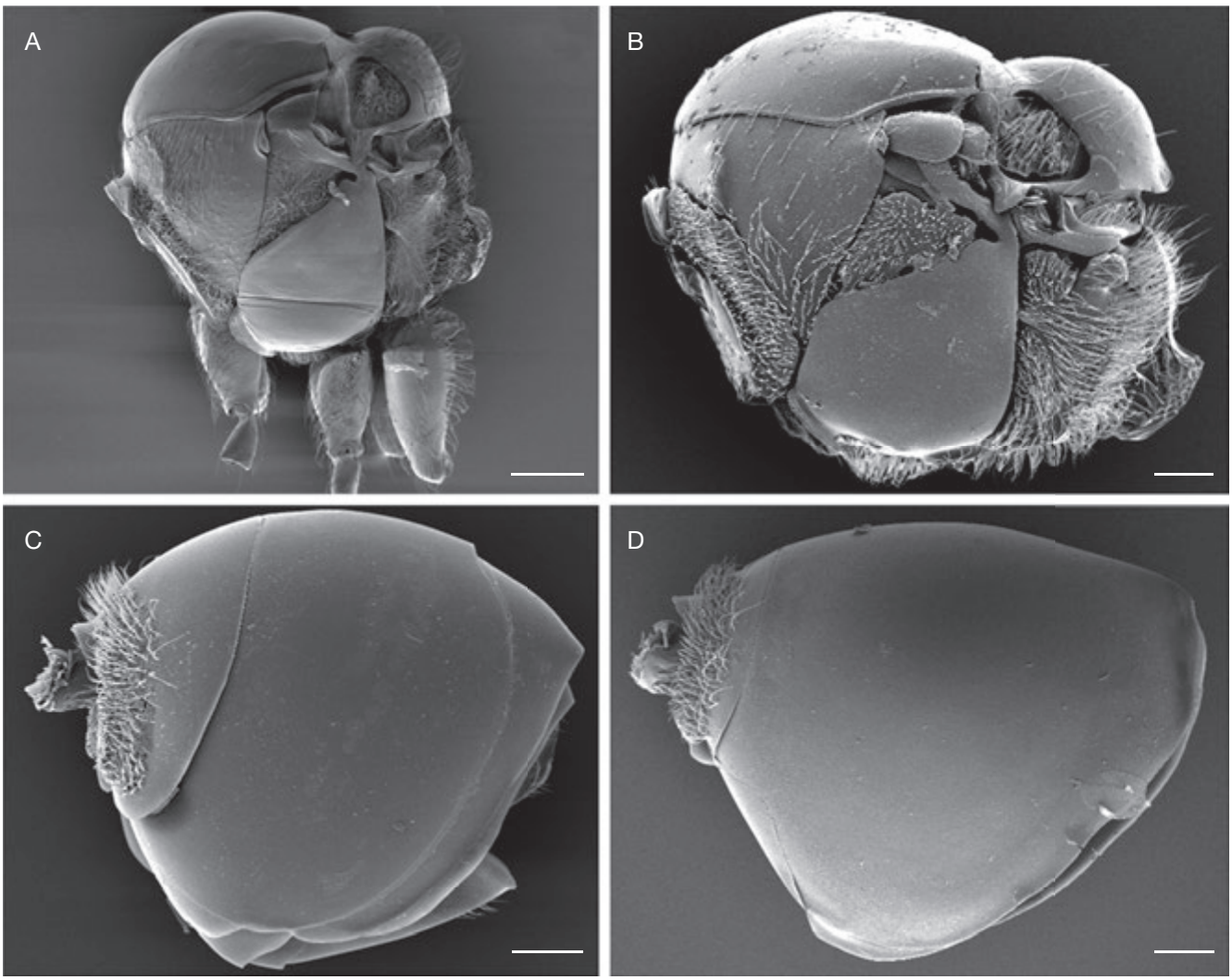

FIG. 11. — Types of mesopleura and metasomae: **A**, *Phaenoglyphis* Förster, 1869 sp.; **B**, **C**, *Alloxysta* Förster, 1869 sp.; **D**, *Apocharips* Fergusson, 1986 sp. Scale bars: 50 µm.

Phaenoglyphis longicornis (Hartig, 1840) (Fig. 10H)

Xystus longicornis Hartig, 1840: 199.

MATERIAL EXAMINED. — (3♀). M09-SES1400-T2-M2: 1♀; SES2000-T5-M1: 1♀; M09-BOR1400-T3-M1: 1♀. 2 ♀ deposited at MNHN and 1♀ at UB.

DISTRIBUTION. — Previously known from the Palaearctic region (Ferrer-Suay *et al.* 2012a). First record from France.

HOSTS. — Unknown.

DIAGNOSIS. — *Phaenoglyhis longicornis* is characterized by: a closed radial cell, 2.7 × longer than wide; pronotal, propodeal carinae and notauli present; oval scutellar foveae with straight lateral margins, separated by a carina and not delimited basally; female antenna with rhinaria beginning from F1, F1 longer than pedicel and F2, F2 subequal to F3 and F3 shorter than F4 (Fig. 10H). Similar to *Phaenoglyphis stricta* (Thomson, 1877), but the two species can be differentiated by the beginning of rhinaria: from the base of F1 in *P. longicornis* and from the second quarter of F1 in *P. stricta*; shape of scutellar foveae: not delimited basally in *P. longicornis*, whereas in *P. stricta* they are not delimited apically and basally; proportions of radial cell 2.7 × longer than wide in *P. longicornis*, versus 2.4 × in *P. stricta*.

Phaenoglyphis salicis (Cameron, 1883) (Fig. 10K)

Allotria salicis Cameron, 1883: 367.

MATERIAL EXAMINED. — (1♀). M09-SES2000-T6-M2: 1♀. Deposited at MNHN.

DISTRIBUTION. — Previously known from Palaearctic region (Ferrer-Suay *et al.* 2012a). First record from France.

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Phaenoglyphis salicis* is characterized by: a closed radial cell, 2.5 × longer than wide; pronotal and propodeal carinae present; notauli barely distinct; scutellar foveae oval, completely defined and

TABLE 3. — List of the 35 Charipinae Dalla Torre & Kieffer, 1910 species recorded in the Mercantour National Park. Besides the newly described species, those followed by an asterisk are additions to the French fauna.

Alloxysta
*abdera** Fergusson, 1986
alpina Ferrer-Suay & Pujade-Villar, n. sp.
*arcuata** (Kieffer, 1902)
*brachycera** Hellén, 1963
*brevis** (Thomson, 1962)
castanea (Hartig, 1841)
circumscripta (Hartig, 1841)
citripes (Thomson, 1862)
consobrina (Zetterstedt, 1838)
*fracticornis** (Thomson, 1862)
franca Ferrer-Suay & Pujade-Villar, n. sp.
*longipennis** (Hartig, 1841)
macrophadna (Hartig, 1841)
melanogaster (Hartig, 1840)
*mullensis** (Cameron, 1883)
nigrita (Thomson, 1862)
obscurata (Hartig, 1840)
pilae Ferrer-Suay, n. sp.
*pilipennis** (Hartig, 1840)
*postica** (Hartig, 1841)
*proxima** Belizin, 1962
pusilla (Kieffer, 1902)
victrix (Westwood, 1833)
Apocharips
*trapezoidea** (Hartig, 1841)
Dilyta
subclavata Förster, 1869
Phaenoglyphis
*abbreviata** (Thomson, 1877)
*americana** Baker, 1896
*calverti** Andrews, 1978
*evenhuisi** Pujade-Villar & Paretas-Martínez, 2006
*fuscicornis** (Thomson, 1877)
*gutierrezi** Andrews, 1978
*longicornis** (Hartig, 1840)
*salicis** (Cameron, 1883)
*stenos** Andrews, 1978
villosa (Hartig, 1841)

with two apical lines; female antenna with rhinaria beginning from F3, F1 longer than pedicel and F2, F2 shorter than F3, F3 subequal to F4 (Fig. 10K). Similar to *P. gutierrrezi*, from which it can be separated by the characters noted in the diagnosis of the latter.

Phaenoglyphis stenos Andrews, 1978
(Fig. 10I)

Phaenoglyphis stenos Andrews, 1978: 43.

MATERIAL EXAMINED. — (1♀). M09-SES1400-T6-M2: 1♀. Deposited at MNHN.

DISTRIBUTION. — Previously known from the Nearctic and Neotropical regions (Ferrer-Suay *et al.* 2012a). First record from France.

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Phaenoglyphis stenos* is characterized by: a closed radial cell, 2.9 × longer than wide; pronotal and propodeal carinae present; notauli present, scutellum with two rounded foveae slightly fused medially and open basally; female antenna with rhinaria beginning from F2, F1 longer than pedicel and F2, F2 subequal to F3, F3 shorter than F4 (Fig. 10I). Similar to *Phaenoglyphis heterocera* (Hartig, 1841), but the two species can be differentiated by the antennae with rhinaria beginning from F2 in *P. stenos*, as opposed to from F3 in *P. heterocera*; ratio of pedicel/F1 in female: F1 longer than pedicel in *P. stenos*, but shorter than pedicel in *P. heterocera*; shape of propodeal carinae: slightly curved in *P. stenos*, versus straight in *P. heterocera*; proportions of radial cell 2.9 × longer than wide in *P. stenos,* versus 2.7 × in *P. heterocera*.

Phaenoglyphis villosa (Hartig, 1841)
(Figs 6C; 9C; 10J)

Xystus villosus Hartig, 1841: 353.

MATERIAL EXAMINED. — (1♂ & 4♀). M09-SES1400-T6-M2: 1♀; M09-SES2000-T4-M1: 1♂ & 1♀; M09-BOR2000-T4-M1: 1♀; M10-CAI2000-T3-M1: 1♀. Material deposited at MNHN, except for 2♀ deposited at UB.

DISTRIBUTION. — Cosmopolitan (Ferrer-Suay *et al.* 2012a). Previously cited from France by Kieffer (1902a: 11, 12, 13; 1904a: 595, 597) and De Gaulle (1908: 26).

HOSTS. — See Charipinae Worldwide Catalogue (Ferrer-Suay *et al.* 2012a).

DIAGNOSIS. — *Phaenoglyphis villosa* is characterized by: a partially open radial cell, 2.1-2.7 × longer than wide (Fig. 9C); pronotal (Fig. 6C) and propodeal carinae present (Fig. 6C); notauli absent, scutellum with two deep oval foveae more or less separated by a carina or completely fused; female antenna with rhinaria beginning from F3, F1 as long as pedicel or slightly longer, F1 subequal to F2, F2 shorter than F3, F3 shorter than F4 (Fig. 10J); male antenna with rhinaria beginning from F3, F1 subequal to F2, F2 shorter than F3. At the moment *P. villosa* is easily differentiated from the other *Phaenoglyphis* species because it is the only one having a partially open radial cell.

DISCUSSION

As aphid hyperparasitoids, Charipinae can have a significant economic impact, hence the importance of improving our knowledge of this group. Our studies of the Charipinae type material and their fauna from different parts of the world (Ferrer-Suay *et al.* 2012, 2013) has been very useful to determine the real limits between species and better know which are the most common, especially in Europe.

In addition to the three new species described here, the study of Charipinae from the Mercantour National Park led to add to the French fauna 19 other species. While most of them were already known from the Palearctic or Holarctic regions, four have been previously recorded only in the Nearctic region (*Phaenoglyphis gutierrezi* and *P. calverti*) or in the Nearctic and Neotropical regions (*P. americana* and *P. stenos*) (Table 3).

It is thus imperative to continue the study of Charipinae from different areas of the world, especially the most poorly studied areas, such as Africa, Australia and the Oriental regions. Large field samplings performed during the course of All Taxa Biodiversity Inventories like that of the Mercantour National Park provide a good opportunity to collect small, poorly studied taxa and thus contribute to reduce the shortfall in their taxonomy.

Key to the Charipinae Dalla Torre & Kieffer, 1910 species recorded in the Mercantour National Park

1. Metasoma with a single visible tergal plate or, if two, with basal tergite much shorter than second along middorsal line (Fig. 11D) 2
— Metasoma with two large visible terga, subequal in length along middorsal line, but basal tergite ¼-⅓ smaller than second in lateral view (Fig. 11C) 3

2. Metasoma with two visible tergal plates; first metasomal tergite much shorter than second along middorsal line (Fig. 11D) ..... *Apocharips* Fergusson, 1986
Open radial cell with R1 and Rs parallel ..... *Apocharips trapezoidea* (Hartig, 1841)
— Metasoma with a single visible tergal plate ..... *Dilyta* Förster, 1869
Distal half of the metasoma with a punctate area; F1 slightly longer than pedicel, slightly curved; F2 or F3 each shorter than F1 (Fig. 10B) ..... *Dilyta subclavata* Förster, 1869

3. Mesopleuron with a basal longitudinal furrow (Fig. 11A) ..... *Phaenoglyphis* Förster, 1869.....4
— Mesopleuron without longitudinal furrow (Fig. 11B) ..... *Alloxysta* Förster, 1869.....13

4. Notaulus present, at least in posterior half of mesoscutum; mesoscutum sculptured or not 5
— Notaulus completely absent, mesoscutum smooth and shiny 12

5. Mesoscutum with imbricated sculpture ..... *Phaenoglyphis evenhuisi* Pujade-Villar & Paretas-Martínez, 2006
— Mesoscutum smooth, without imbricated sculpture 6

6. Antenna longer than body 7
— Antenna equal to or shorter than body 10

7. Rhinaria and flagellum thickening begin from different flagellomeres 8
— Rhinaria and flagellum thickening begin from the same flagellomere 9

8. Female: flagellum thickening beginning from F2; F1 2.1 × as long as pedicel (Fig. 10D); notaulus clearly marked along their entire length; longitudinal carinae of metascutellum do not branch at base. Male: thickening and rhinaria begin from F2; F1 strongly curved, F2 shorter than F3, F3 subequal to F4 .....
..... *Phaenoglyphis americana* Baker, 1896
— Female: flagellum thickening beginning from F3, F1 1.3 × longer than pedicel (Fig. 10L); notaulus deeply excavated anteriorly and weakly posteriorly; longitudinal carinae of metascutellum branching at base. Male: thickening begin from F3 and rhinaria from F5; F1 curved, F2 subequal to F3, F3 shorter than F4.....
..... *Phaenoglyphis fuscicornis* (Thomson, 1877)

9. Female: Rhinaria and flagellum thickening begin from F1; F2 subequal to F3 (Fig. 10H); scutellar foveae with open at the bottom; radial cell 2.7 × longer than wide; Rs slightly curved. Male unknown.....
..... *Phaenoglyphis longicornis* (Hartig, 1840)
— Female: Rhinaria and flagellum thickening begin from F2; F2-F3 different in length (Fig. 10I); scutellar foveae slightly fused; radial cell 2.9 × longer than wide. Male unknown .....
..... *Phaenoglyphis stenos* Andrews, 1978

10. Female: F1 subequal or shorter than pedicel, F2-F4 distincly unequal in length (Fig. 10C); small and oval scutellar foveae completely defined and separated by a thick carina. Male unknown.....
.....*Phaenoglyphis abbreviata* (Thomson, 1877)
— Female: F1 longer than pedicel, proportion between flagellomere and shape of scutellar foveae different..... 11

11. Female: F2 shorter than F3, F3-F4 subequal in length (Fig. 10K); mesoscutum with a line of setae near each notaulus, notauli barely distinct; scutellar foveae well-defined and with two apical lines. Male unknown .....
..... *Phaenoglyphis salicis* (Cameron, 1883)
— Female: F2-F4 subequal in length (Fig. 10G); mesoscutum with central area glabrous, notaulus deeper posteriorly than anteriorly; scutellar foveae slightly open anteriorly. Male unknown.....
..... *Phaenoglyphis gutierrezi* Andrews, 1978

12. Radial cell partially open along anterior margin (Fig. 9C); scutellar foveae rounded and slightly fused apically
..... *Phaenoglyphis villosa* (Hartig, 1841)
— Radial cell closed (like Fig. 9D); scutellar foveae rounded, separated by a carina and open basally.....
..... *Phaenoglyphis calverti* Andrews, 1978

13. Radial cell open or partially open 14
— Radial cell closed 27

14. Radial cell completely open 15
— Radial cell partially open 21

15. Propodeal carinae present forming a thick plate 16
— Propodeal carinae absent 18

16. Pronotal carinae absent (Fig. 7D); F1 subequal in length to pedicel (Fig. 7B); radial cell 2.4 × longer than wide (Fig. 7C) ..... *Alloxysta franca* Ferrer-Suay & Pujade-Villar, n. sp.
— Pronotal carinae present; F1 longer than pedicel; radial cell less than 2.4 × longer than wide 17

17. F2 longer than F1; F2 longer than F3 (Fig. 2A) ..... *Alloxysta abdera* Fergusson, 1986
— F2 shorter than F1; F2 subequal to F3 (Fig. 8D) ..... *Alloxysta pilae* Ferrer-Suay, n. sp.

18. Pronotal carinae absent; F2 longer than F1 (Fig. 2R) ..... *Alloxysta proxima* Belizin, 1962
— Pronotal carinae present; F2 shorter or subequal to F1 19

19. F2 subequal to F1 (Fig. 4C); radial cell 3.8 × longer than wide (Fig. 4A) ..... *Alloxysta alpina* Ferrer-Suay & Pujade-Villar, n. sp.
— F2 shorter than F1; radial cell shorter than 3.8 × longer than wide 20

20. F2 shorter than F3 (Fig. 2N); radial cell 2.9 × longer than wide (Fig. 3N) ..... *Alloxysta nigrita* (Thomson, 1862)
— F2 longer than F3 (Fig. 2C); radial cell 2.7 × longer than wide (Fig. 3C) ..... *Alloxysta brachycera* Hellén, 1963

21. Propodeal carinae absent 22
— Propodeal carinae present 23

22. Female: F1 subequal to F2, F2 longer than F3, F3 subequal to F4 (Fig. 2K). Male: F2 and F3 curved, F1 subequal to F2, F2 longer than F3, F3 longer than F4; radial cell 3.0 × longer than wide (Fig. 3K) ..... *Alloxysta macrophadna* (Hartig, 1841)
— Female: F1 longer than F2, F2 shorter than F3, F3 shorter than F4 (Fig. 2O). Male: without any curved flagellomere, F1 longer than F2, F2 longer than F3, F3 shorter than F4; radial cell 2.7 × longer than wide (Fig. 3O) ..... *Alloxysta obscurata* (Hartig, 1840)

23. F1 subequal to pedicel 24
— F1 longer than pedicel 25

24. Propodeal carinae not protruding (Fig. 6F); radial cell 2.1 × longer than wide (Fig. 3G) ..... *Alloxysta citripes* (Thomson, 1862)
— Propodeal carinae protruding and clearly visible; radial cell 2.5 × longer than wide (Fig. 3Q) ..... *Alloxysta postica* (Hartig, 1841)

25. Rhinaria and flagellum thickening begin from F3 (Fig. 2J); radial cell 2.6 × longer than wide (Fig. 3J) ..... *Alloxysta longipennis* (Hartig, 1841)
— Rhinaria and flagellum thickening begin from F4; radial cell less than 2.6 × longer than wide 26

26. Female and male: F1 longer than F2, F2 subequal to F3 (Fig. 2E); radial cell 2.3 × longer than wide (Fig. 3E) ..... *Alloxysta castanea* (Hartig, 1841)
— Female: pedicel-F3 subequal in length (Fig. 2L). Male: F1 longer than pedicel and F2, F2 subequal to F3; radial cell 2.0 × longer than wide (Fig. 3L) ..... *Alloxysta melanogaster* (Hartig, 1840)

27. Propodeal carinae present 28
— Propodeal carinae absent 31

28. Pronotal carinae present 29
— Pronotal carinae absent 33

29. Female: F1 subequal to pedicel (Fig. 2B). Male: F2 slightly curved; radial cell 2.3 × longer than wide (Fig. 3B) ..... *Alloxysta arcuata* (Kieffer, 1902)
— Female: F1 longer than pedicel. Male: without any curved flagellomere or F1-F3 slightly curved; radial cell more than 2.3 × longer than wide 30

30. Female: F2 shorter than F3 (Fig. 2S). Male: rhinaria begin from F1, pedicel-F3 subequal and slightly curved; propodeal plate with slightly curved lateral sides; radial cell 2.7 × longer than wide in female and 2.4 × longer than wide in male (Fig. 3S) ..... *Alloxysta pusilla* (Kieffer, 1902)
— Female: F2 subequal to F3 (Fig. 2P). Male: rhinaria begin from F2, pedicel-F3 unequal, without any curved flagellomere; propodeal plate with strongly curved lateral sides; radial cell 2.4 × longer than wide in both male and female (Fig. 3P) ..... *Alloxysta pilipennis* (Hartig, 1840)

31. Head yellowish; F2-F4 subequal in length (Fig. 2T); radial cell 3.0 × longer than wide (Fig. 3T); propodeum without setae in the longitudinal area where the carinae are present in other Charipinae (Fig. 6B) ..... *Alloxysta victrix* (Westwood, 1833)
— Head brown; F2-F4 distinctly unequal; radial cell less than 3.0 × longer than wide; propodeum entirely setose 32

32. Female: rhinaria and club-shaped begin from F3; F1 subequal to F2, F2 shorter or subequal to F3 (Fig. 2F). Male: F1-F3 distinctly unequal; radial cell 2.5 × longer than wide (Fig. 3F) ..... *Alloxysta circumscripta* (Hartig, 1841)
— Female: rhinaria and flagellum thickening begin from F3 or F4; F1 longer than F2, F2 subequal to F3 (Fig. 2I). Male: F1-F3 curved; radial cell 2.7 × longer than wide (Fig. 3I) ..... *Alloxysta consobrina* (Zetterstedt, 1838)

33. Antennae shorter than body length; F1 shorter than pedicel; F1-F3 subequal in length (Fig. 2D); radial cell 2.1 × longer than wide (Fig. 3D) ..... *Alloxysta brevis* (Thomson, 1862)
— Antennae longer than body length; F1 subequal or longer than pedicel; F1-F3 distinctly unequal in length; radial cell longer than 2.1 × longer than wide 34

34. Female: F1 longer than pedicel; F1-F3 subequal in length (Fig. 2H). Male: F3 curved ..... *Alloxysta fracticornis* (Thomson, 1862)
— Female: F1 subequal to pedicel; F1 longer than F2, F2 subequal to F3 (Fig. 2M). Male: without any curved flagellomere ..... *Alloxysta mullensis* (Cameron, 1883)

Acknowledgements
This research was supported by the project CGL2011-22889 of the Ministerio de Ciencia e Innovación (Spain) and the grant AP2009-4833 of the Ministerio de Educación (Spain).

Thanks to the European Distributed Institute of Taxonomy (EDIT) for supporting this study as a part of the All Taxa Biodiversity Inventory + Monitoring Project (ATBI+M). We warmly thank Louis Deharveng from the Muséum national d'Histoire naturelle (ISYEB) who organized and supervised the "Terrestrial Invertebrates Fieldwork Module" as well as the guards of the Mercantour National Park, notably J. Molto, M. Torjman and E. Menissieux, who kindly collected the Malaise trap samples every two weeks along the four to five months of the sampling periods. We are also very grateful to Magdalena Czyrnek and Thomas Théry, who sorted the specimens to the family level. We thank the reviewers that contribute to improve our manuscript.

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Submitted on 20 March 2014;
accepted on 17 October 2014;
published on 27 March 2015.